The Everything Age

A Pop Culture eBook For Geeks

by **Robin Izsak**
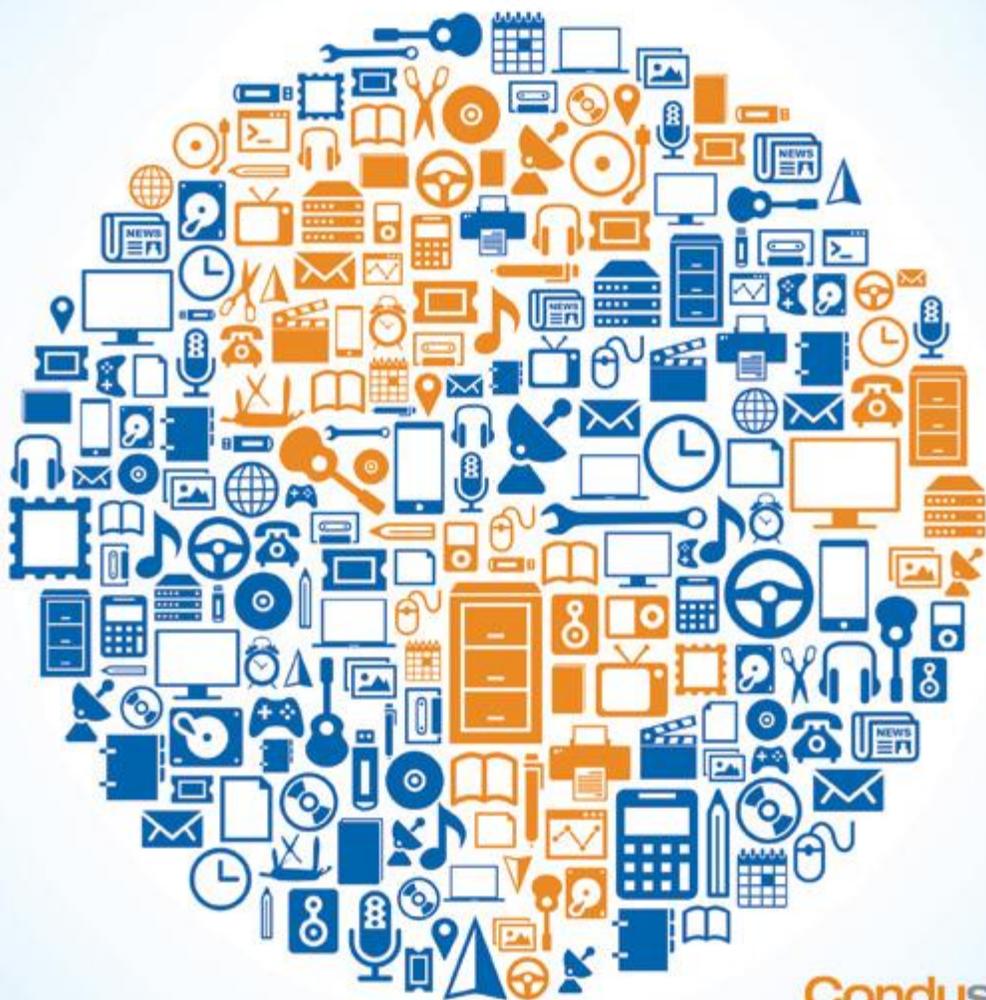
Acknowledgements

I would like to thank the Internet.

Preface

THIS ISN'T THE INFORMATION AGE, this is the Everything Age.

There is more data in motion today than ever, at home and in the workplace. And that's a good thing. We live in an informed time, with more options, more free time, and greater prosperity.

But with all the advantages technology has delivered, we really feel it when our "stuff" isn't available; when things slow down. In a relatively short time, we've become so accustomed to immediacy—to an idea of everythingness—we're disconnected and lost without it.

This is a true story of invention, of living and working in the Everything Age.

Table of Contents

Revolution and Invention

IMAGINE LIVING DURING THE TRANSITION from horses to automobiles. Were people's minds blown every single day? Did they look out the window expecting the usual scene: carriages slowly passing, horses bobbing their heads, only to gaze on wheeled machines, wondering if they had been sucked into some outlandish future dreamscape? Imagine the difference in familiar sounds—the rhythmic clip-clopping of hooves up and down the streets, slowly replaced by a cacophony of engines and tires and horns.

It didn't happen overnight—and it wasn't the first OMG moment experienced by mankind. Imagine the country folk who witnessed the first railway being carved into the landscape. People really lost their minds with that one—it was fodder for all the famous poetry of the day. Romantics like Wordsworth and Keats contemplated the loss of their natural world, swallowed up by industry and skeptical of the progress it promised.

Those of us over the age of, say, 35, can remember a time before PCs. I learned how to type on an electric typewriter, and employed that skill for my term papers through my second year of college. I remember learning MS DOS and WordPerfect at my first job—alt-F3 to underline, alt-F8 for bold.

Then it happened. The greatest invention of my lifetime. The Internet. Universities were early-adopters of the "information superhighway," and I happened to work in academia in 1994. I remember tinkering with Mosaic for the first time. A co-worker said, "Type something in, see what happens." I typed Elvis. "Can't Help Falling in Love – Lyrics" came back. I couldn't believe it. Instead of feeling helpless and small in the face of change, like the Romantics of the early Industrial Revolution, I felt a wave of absolute awe.

This wasn't the impossible stuff of 1980s movies like *Weird Science* or *Electric Dreams*, this was within reach. We were witnessing a new future—sensing vast possibility on the horizon, without knowing what it would really mean to our day-to-day lives.

Quality = Time + Choice

THE NICE THING ABOUT LIVING through the Everything Age is you don't experience that sense of loss and dread that permeated life during the Industrial Revolution. You don't suffer the feeling that your humanity will be wiped out by giant machines; your pastoral experience annihilated by filth.

Instead, you get email and information and music and everything-you-ever-wanted-to-know-about-anything, available now—right now—on any number of awesome gadgets that don't take away your humanity or your individualism—they celebrate it. You might mourn the lost art of letter writing or long for the feel of an actual book in your hands, but really, if you're honest, you don't care about that stuff. When was the last time you wrote a letter anyway?

And you know what's even better? If you're a modern-day Romantic, a contemporary Keats, you don't have to stand by while the things you cherish get eaten by condo developments or parking lots—you can hold fast to bucolic ideas as you shop at farmer's markets, listen to folk music, and support causes through social media. You have options, lots and lots of options, which, really, Wordsworth and his crew didn't have. You can even write letters and drop them in the mail if it means that much to you.

Relatively speaking, we live in better times. Better than what? Better than those previously experienced by humankind. We have declining violence, less

prejudice, more variety in food, music, art… it goes on and on. But if a sound measure of improvement is the amount of time it takes to carry out a task— whether it's laundry, sowing crops, traveling to Kathmandu, getting in touch with an old friend—you name it, it takes a fraction of the time today than it ever has in the past.

What does that mean to you? It means you have more time to do what you want. More time to watch football, to play with your kids, to see the world. Oddly enough, it also means more time to work, which we're doing now more than ever—by choice in many cases. If we measure the quality of our lives by the time we have to do the things we want, then these are pretty good times.

CHAPTER 3

All Digital Everything

WITH ALL THIS FREE TIME, I like to fill it with music. In my lifetime, I have shopped for vinyl records at record stores, purchased 8-track tapes, then cassettes, then marveled at the introduction of CDs, and then… I made it all disappear. I just finished purging my home of all physical music and movie media. A single server the size of a small paperback sits in a closet in my office. That server holds all my digital music, movies, photos, and documents. It is networked and hidden, backed up to the cloud, yet it is omnipresent. Sometimes I miss liner notes and album art, but you know what? I listen to more music today than I ever have, since I don't have to dig for a CD, load it, and put it back when it's over.

Sometimes we're so blinded by nostalgia that we can't see what's real. Digital music saves us from having to own physical media, from having to store it and schlep it around, with limited ways to actually listen to it. Today I have access to a greater variety of music than ever before, yet it occupies none of my much-needed living space. For all these reasons there has never been a better time to love music, but if that's not enough, if you still long for the auditory warmth of a vinyl LP, there are any number of shops and flea markets that cater to you—the collector. There it is again. Options. Choice. Wordsworth didn't have that.

Funny thing is, with all this time we have now, we have increasing expectations of immediacy and reliability. How irritated do we get when we can't get online, if our apps are slow, if our "stuff" doesn't work? We've come to expect a level of availability and speed from our technology, and when that level isn't met, we feel it.

We lost Internet connectivity at work the other day due to a telephone worker fixing lines a block away. There was no point in sticking around. Work simply could not continue—no access to the network, no email, no websites available for research. Some of us turned to mobile devices to keep going, some of us trickled out, dazed and confused, and headed home where we could get back online and finish the email we were in the middle of.

At home and at work we are so completely tethered to data, information, and technology that we are lost souls without it.

A-Ha! Moments

IN A RELATIVELY SHORT TIME—LESS than 20 years—the Internet has completely changed the way we work and the way we live. It's not an exaggeration to say we rely on it, and without it, we might as well shut down the notebook and head home.

I'm not sure we'll see another invention as significant in our lifetime. Maybe we will, but I can't imagine it. No doubt we'll see great technologies emerge that leverage the Internet in the way smartphones have, and no doubt we'll get more efficient at using it in the workplace. Virtualization over the past ten years has moved to the mainstream. Companies can decommission old servers, consolidate the infrastructure, and load more applications and users on one machine. In the next decade we'll see software-defined networks and storage driving speed and efficiency across the IT ecosystem.

But back to my music. Specifically, the collection that sits on the tiny server in my closet. That server can hold 2TB of data for less than $150. It can handle about 500,000 songs. And that's just my house. We live in a time when 2TB of data is nothing for home use, so imagine the sheer magnitude of data in motion every day, worldwide, as massive corporations use the Internet for everything they do. Really. Everything. Is there even such a thing as filing or faxing anymore? Do filing cabinets still exist?

So while we may or may not see another invention on the scale of the Internet in our lifetimes, we'll experience emerging technologies that make it all work better, and there will be plenty of "a-ha!" moments along the way. The "it-seems-so-obvious-why-didn't-someone-think-of-that-before?" moments that come every so often.

I had one of those moments recently with a news story about a Swiss inventor who found a way to continuously monitor blood glucose levels with a tiny chip under the skin. It's painless and efficient, and eliminates the need for diabetics to prick their fingers for blood testing. If glucose levels are too high or dropping too low, the chip triggers an alert to their iPhone or Android. Not only does it take away pain and constant hassle, it can save lives.

Yes, Bruce Springsteen said it all when he said *these are better days.* Yet for all the mind-boggling data in motion out there, with staggering growth rate projections (Moore's Law… haven't heard enough about *that* over the last ten years), we have increasingly high expectations of performance—of how long we wait for our transaction to complete, of how long it takes to accomplish a thing. This can be seen every time we whip out our smartphones. I don't especially love my bank (who does?) but I love that they've made technology available that means I never have to interact with a human again. I use my phone to take a photo of a check, use their app to deposit the funds, and wait for an email confirming the transaction. I didn't have to park, I didn't have to wait in line (are there still lines?), and I didn't miss a second of *Lost*, which I just started watching on Google TV.

But… when that app isn't working, or it can't read the signature on the digital image of the check, man do I get bent. This means I have to go to an ATM or, worse yet, visit a branch. Funny how we grow so accustomed to these luxuries that we get so put out when they aren't available, even for a short time.

A (Half) Moment in Time

GOING BACK TO THE 19TH Century for a minute, there was Charles Babbage, an English mathematician recognized for inventing the first computer. Around 1833, his initial attempt stumbled, but he had success with his second attempt, the Analytical Engine. Along the way, Babbage met Ada Lovelace, daughter of the notorious poet, Lord Byron, and she would take her place in history as the world's first computer programmer.

There's a lot to the story, but the main action happened between 1833 and 1849, as Babbage perfected his designs, refined his techniques, and tried and tried again. The result was a machine intended to remove human error from calculations—the first programmable computing machine.

Charles Babbage was busy. While working on his computer, he also taught math at Cambridge University, and wrote three books. Serious books, like *On the Economy of Machinery and Manufactures*, where he theorizes on commercial production and division of labor. But I'm a fan of his simpler musings, like this one: "The half-minute which we daily devote to the winding-up of our watches is an exertion of labour almost insensible; yet, by the aid of a few wheels, its effect is spread over the whole twenty-four hours."

In Babbage's day, 30 seconds is "almost insensible"—it's no big deal. Wind the watch for 30 seconds, get 24 hours of maximum utility, which is, you get to know what time it is, all day and all night. 30 seconds for 24 hours.

But how do we feel about that now? Is 30 seconds acceptable in today's technology terms? Imagine waiting 30 seconds for a query to complete, to send an email, for an application to launch. Wait another 30 seconds while your smartphone finds your location so navigation starts working. You just missed your freeway exit. Fail!

We are so completely entwined with technology—at home, at work, everywhere we go—that every 30 seconds spent waiting for an action to complete would amount to a huge chunk of time, every day. In fact, 30 seconds spent waiting is unthinkable. Rather, we think of 30 seconds as an ideal timeframe to do something cool. Consider the in-the-moment, ephemeral nature of Instagram, Facebook, and Twitter: in less than 30 seconds you've taken a photo, shared it, and reached tons of people—instantly. Millions of Kobe Bryant's Twitter followers (yes, millions) know what he's thinking, within ten seconds of a game-winning shot.

Instagram's co-founder, Mike Krieger, described Instagram as "filling time gaps in people's lives." He was discussing social media behavior, and how most people access these apps during short breaks. So for Instagram, speed is of primary importance: uploading your own photos and displaying others' instantly is the only thing that matters. And of course he's right. Where would Instagram be today, if it took 30 seconds to upload and display images?

Yes, as much as we demand speed—as much as we've come to expect it in our world of immediacy, of everything, of *now*—we still struggle with how to get it. I mentioned the day we lost Internet connectivity at work, but that was an extreme technology fail. What's more common is that stuff is just slower than we want. Over time, Outlook might take longer to open, longer to send and receive, and heaven help you if you work in a giant corporation, which might require frequent access to a large employee database, or CRM applications, or any transaction-heavy work you need to plough through daily.

But that problem—the problem of slowness and sluggishness—is due to the sheer amount of data being generated, being transferred, and actually being *used* with more frequency than ever before.

Data could very well be the most over-used word in technology today. But when we talk about data, we're talking about *everything* we do. It's every patient record in a hospital system, it's every image file at a design firm, it's every MP3 saved to every cloud in the world. Only a few years ago we were held back by the amount of data we could store. Now the challenge is the amount of data we can move—and how quickly.

At some point in the last few years, we've come to view Wi-Fi almost as a civil right. We absolutely lose it when our expectations of immediacy are thwarted by technology, so we really have no choice but to acknowledge how completely entwined we've become—us and our stuff.

I'll come clean about a recent technology tantrum of my own. I bought a restored 1920s radio at a flea market. It looks amazing, but it transmits only AM, which no one under 70 cares about. What's great about this radio is that it's been rebuilt with a jack that connects to my iPhone. So I can listen to my Spotify and iTunes playlists through the vintage sound of glass tubes and a tinny amplifier. It's absolute magic. I'm so in love with this radio, I don't even mind the time it takes for the tubes to warm up and the sound to kick in, because this is expected of 1920s technology. What I do mind, is that Spotify failed, my songs wouldn't load, and I had to reboot the phone to get it working. And at that moment, I realized my own folly: grumbling that I couldn't instantly hear digital music that exists in a cloud, on hardware I will never see, that travels through invisible networks, to my tiny device, to be accessed through an app, to be heard, finally, through my very cool Zenith tube radio.

Be that as it may, like everyone else, I want what I want, when I want it. I live in the Everything Age.

The End and the Beginning

West of House

You are standing in an open field west of a white house, with a boarded front door.

There is a small mailbox here.

THAT'S THE OPENING OF *ZORK,* a classic, text-based Infocom game that nerds will remember well. My cousin, Joel Berez, was one of its creators, and my older brother, a nerd with a homebuilt computer and early access to *Zork*, was among its first fans. I did pretty much whatever my brother did, so naturally I was also a fan, but nowhere near his level of nerdiness. I was also six years younger, so in 1980, when we huddled around the behemoth monitor thing in our parents' finished basement, my mind was officially blown—for life—by *Zork*. By the green font on the black screen: simple and motionless, except for that blinking cursor waiting for me to key-in my next move.

Infocom was founded by a group of MIT kids and later merged with Activision. Everything that happened after that became a murky legal mess,

further complicated by the rapidly changing computer landscape. The industry was in flux, with long-time manufacturers like Tandy, Atari, and Commodore disappearing, and the PC and Mac markets rising to dominance.

I was blissfully unaware of all of this. I could have played *Zork* for the next ten years, seeking all the hidden clues and poring over the *New Zork Times* monthly newsletter. Meanwhile, my brother moved on, dragging every new motherboard, Mac, and gaming console into our basement with the enthusiasm of a mad scientist. I didn't realize what a lasting impact this would have—the sounds of early computing, the constant tapping of my brother at the keyboard, the strangeness of all this new hardware sitting on our dad's utility shelf. Our parents didn't have a clue what any of it was, and neither did anyone else. "Wow, your brother must be smart," my friends would say.

They were right, he was smart. He studied aerospace engineering, obtaining a Masters from Oxford University, then went on to get an MBA. In the early '90s, he walked away from aerospace, feeling the industry was stagnant, full of old guys in taped-up Buddy Holly glasses. Instead he joined the energetic new world of the technology start-up, where he thrived. When he passed away from brain cancer in 2011, he was a project manager on the Xbox team, living and working in Seattle. He loved it.

But I digress. The thing is, he was an optimist and not afraid to change his mind, which is semi-unusual for a true nerd, who often takes pride in being smarter than everyone else, reluctant to accept new ways of thinking, especially when it comes to technology. Apple haters, Microsoft haters, Linux purists—you name it—there are techies with strong opinions on everything. But if you get stuck in that kind of rut—man, do you miss out. In life, in work, in so many ways, you don't evolve. I learned a lot from him, not least of which is how to embrace technology, invention, and change.

I was on a call the other day, talking with a guy on the storage and systems team with one of the world's largest gaming companies. This person is responsible for systems that support 3PB of data worldwide, in a gaming studio that generates an unfathomable amount of code, image, sound, video—insane amounts of heavy-duty data—with an 80-100% rate-of-change per day. What an astounding evolution from a group of MIT kids banging out

code for interactive fiction games like *Zork* and *The Hitchhiker's Guide to the Galaxy*. In their wildest dreams they could not have conceived of today's gaming studio. But modern technology gives us modern problems.

The reason for our call was to discuss how that staggering amount of data brought their studio to its knees. Stuff. Stopped. Working.

Imagine 700 developers on the production floor—uploading and downloading massive files, performing data-intensive activities like sound and video rendering—along with machines compiling games for every major platform—PlayStation, Xbox, Wii—you get the idea. It truly is mind-boggling. It's nearly 2014, yet here we are struggling with the limitations of physical things—of hardware and spinning disks that haven't kept pace with our ideas, our creativity, our *everything*. You can see this especially in the gaming world, where leagues of artists and developers converge to create narratives and experiences that transcend the limits of other media. Imagine what might be if their world weren't weighted by the physical limitations of hardware, of massively complicated and expensive data centers that take up space and consume tons of energy.

And not just gaming—all of us—in any industry, in any capacity. If data represents the spirit of what we do—ideas, information, creativity, analysis, thought—then we really must look at new ways to ensure its performance: to ensure it does what we need it to do, without drowning us in a sea of more stuff and greater complexity.

The answer to performance problems caused by too much data, has always been to add hardware somewhere in the mix and suffer through needle-in-the-haystack troubleshooting; but we need to change the way we look at the problem. If data equates to loads of I/O, which travels around the infrastructure and creates bottlenecks and latency, what if we could prevent the surplus of I/O from occurring in the first place? What if software could prevent excessive I/O from being created, and turn the minimal, remaining I/O into organized traffic patterns so every read and write is lean and mean, fast and furious? Suddenly the pathways are clear of all the noise, and everything that touches the ecosystem runs better.

So even as our data-centricity—our imagination and our potential—have outpaced the ability of hardware to keep up, technologies are emerging to keep us moving forward, unencumbered by the limits we've always had. And while software that solves the I/O problem might seem like a pretty far cry from an invention like the Internet, it absolutely signals paradigm shift for the way we manage data. The idea that software could replace hardware as the first option for data performance—the best way for IT to support more users and manage increasingly data-centric applications without more and more hardware—this is the Holy Grail of enterprise application and asset management. This is the emerging technology that promises to reconcile our growing need for performance with the crushing amount of data we create.

In the Everything Age, where we might measure quality of life by the time we have to do the things we want, here is technology that delivers time. And all we have to do is change the way we look at the problem.

Activision reissued *Zork* in 2012 as part of the *Lost Treasures of Infocom* package for iOS devices. Imagine that. From my brother's homebuilt computer in the basement, *Zork* has found new life on my iPhone. The original wonder might be long gone, but it has been replaced by the possibility of what can be.

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open mailbox.
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Further Reading

V-LOCITY® I/O OPTIMIZATION SOFTWARE

Product information:

V-locity® Overview

Papers and webinars:

IDG: Unnecessary I/O and its Impact on Performance

IDC: The Shift to I/O Optimization to Boost Virtual and Physical Server Performance

Webinar: Taneja Group analysts present Why Hardware for VM Performance Should Be Your 2nd Option

Case studies:

SunCoke Energy Solves Months of Oracle Performance Troubleshooting with V-locity® VM™

Bell Mobility Implements V-locity® VM,™ Increases Workload Throughput by 98% in Virtual Environment

Hancock Regional Hospital Deploys V-locity for MEDITECH on Virtual Servers to Solve Critical Performance Issues

REFERENCED IN *THE EVERYTHING AGE*:

The Norton Anthology of English Literature: The Victorian Age

Charles Babbage: Mathematician, Philosopher, Inventor, Mechanical Engineer

Infocom: The Master Storytellers