



An Introduction to zLab

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zLab is the latest initiative from CommerceNet Labs, our new research program. Before we focus on the future, though, it would be useful to explain how we got here.

Ten years ago, CommerceNet was founded as a non-profit organization to promote commercial use of the Internet. From our vantage point in 2004, it's hard to believe that back then, commercial use of the Internet was considered illegal! Most traffic crossed the National Science Foundation's NSFnet backbone at some point, and its Acceptable Use Policy (AUP) was only "re-interpreted" to support commercial use as late as March 1993 [<http://www.sit.wisc.edu/~jcthomsonjr/j561/NSFpolicy-7.html>].

Thus, in April 1994 it was pretty newsworthy that CommerceNet came together and publicly demonstrated one of the first credit-card purchases from an Web shopping service [NYT article]. Enterprise Integration Technologies, or EIT, was Marty Tenenbaum's latest startup-cum-laboratory at the time, and it struck a deal with Randy Adams to build the Internet Shopping Network (ISN). CommerceNet, by contrast, was a sort of 'Chamber of Commerce' for the Internet that allowed many key Silicon Valley leaders to collectively promote this sort of innovation.

As CommerceNet grew from local, then national roots, to even spanning many international incarnations (some of which are still active to this day!), it did so without becoming a standards body or just a trade association. It has always been at its best when it was promoting some fundamental advances in electronic commerce, usually led by startups and piloted by big business.

Examples of this pattern range from early work on encryption — the S-HTTP protocol for EIT's Secure Mosaic browser that preceded Netscape's SSL (did you know Marty was the guy who was so enthusiastic about the Web he recruited Marc Andreessen out to California in the first place? 😊) — to audience measurement. Yes, back when there were even front-page-of-the-business-section debates on how many Americans were even dialing into this newfangled Web thing, CommerceNet's members sponsored the first Nielsen survey of Internet usage. Later, in conjunction with the Electronic Frontier Foundation (EFF), we set up and spun out TRUSTe, to increase consumer confidence in Internet commerce.

In later years, CommerceNet won Federal research grants to promote the use of XML, transforming the organization from B2C concerns into the B2B boom. It even led to the notorious shot of Marty in *Time* magazine, captioned "the father of XML." In fact, we didn't "do standards" then either. CN was assiduously promoting the work of the World Wide Web Consortium (W3C), where I started my own career, and its alumni even went on to lead other bodies, such as the Organization for the Advancement of Structured Information Standards (OASIS, once known as SGML-Open).

Instead of legislating standards, CommerceNet focused on pilot applications of them in real-life. By sponsoring multi-member projects that hired such unknown startups as Verisign and

webMethods to enable early business hubs, CN also sat astride enough deal flow that it spun off a new consulting arm CNgroup. After several twists and turns, that became the technological heart of CommerceOne, Inc.

And that, ladies and gentlemen, brings us back to tonight: As a nonprofit body, fiduciary duty compelled the Board to diversify its holdings as soon as it could. To the tune of eighty million dollars...!

A large chunk of that endowment still exists, as well as a substantial new venture fund, jointly run by CN and General Asset Capital (GAC). What I'm here to announce tonight is that we will also invest a portion of the endowment into new, fundamental research required to "Unleash the Now Economy."

The Now Economy is CommerceNet's vision for the next ten years of electronic commerce. The first era has been about using the Internet to overcome the friction of time and space, allowing larger and larger organizations to take advantage of its global reach. Think of eBay or Amazon: these are gigantic incarnations of still-recognizable business forms such as garage sales or department stores.

As we take advantage of the Internet to transcend *organizational* barriers, however, we foresee the evolution of entirely new business models. I could list a slew of related buzzwords at this point, but what's more important than conjuring visions of mass customization or real-time supply chain optimization is to focus on the particular approach we're betting on: *decentralization*.

The key drivers of the Now Economy, a term coined by the Global Business Network (GBN) in 2000 and later popularized by *The Economist*, are "faster" and "collaborative." By faster, don't think of the mere hours of inventory a Dell or an Apple maintains for its just-in-time factories, think about the frenetic pace of global financial markets: what would options for hard-drive futures look like? And by "collaborative," don't just think about emailing a contract to your client to mark up, think about how organizations learn in a 24-hour news cycle: what would you get if you could cross-breed blogs and instant messaging?

My own training is in economics and computer science; here's how I view the Now Economy from those perspectives.

Today, the Internet helps companies collect primary supply and demand signals: it's easy to actually sell and shop on the Web, from handbags to o-rings. What we don't know how to do well is collect and process secondary signals and other derivatives. From the classic logistics exercise called the Beer Game, we learn that the bullwhip effect caused by latency in order signals from bar to distributor to brewer play havoc with the overall supply chain. One would think with instantaneous Internet ordering, eliminating those time lags would smooth everything out. Not quite.

Even with real-time data, which is the state-of-the-art for B2C and B2B electronic commerce today, you can't tap into the bartender's knowledge that there's a homecoming game on campus next week that's sure to inflate demand — and that it will fall back the day after. What market theoreticians will tell you is necessary to improve efficiency is aggregating secondary signals in the forms of options or futures markets.

Turning to computer science, the Now Economy poses its own version of those problems. The archetypal software architecture of the New Economy was the client/server database. eBay or Amazon really aren't that different from the 60's era SABRE airline ticketing system. A trader can fetch a price quote from somewhere, mull it over, then commit a transaction to purchase something. The fundamental premise is that there's a master/slave relationship at work — and the shopper is the slave.

In a genuinely peer-to-peer setting, there's no such thing as the true value of a variable 'right now'. The flip side of the coin of the Now Economy's "faster" and "collaborative" properties are *latency* and *agency*, two fundamental forces that threaten the entire edifice of "distributed computing" today.

Instead, a recent body of work is emerging that distinguishes between distributed systems and decentralized ones. This includes my own doctoral dissertation, which developed a particular theory of how the Web can be incrementally modified to support the dynamics of the Now Economy.

Let me sketch out a scenario that brings all of these aspects I've been discussing together: Imagine an eBay without eBay.

That is, think about how powerful eBay is as a metaphor for electronic commerce: anyone can join, anyone can list, anyone can bid, and quick-as-a-whistle eBay auctions line up supply and demand to spit out what must be the True Price. Now imagine that same process without an eBay, Inc; call the decentralized version "zBay":

1. How could you be certain of anyone else's reputation? Heck, before tackling trust management through feedback ratings, how could you even be sure you're dealing with the same party the next day? ZBay requires decentralized identity management to be secure.
2. How could you discover what products you want? UPC barcodes? EPC RFID codes? Amazon ASIN numbers — whoops, that one's a copyright violation! Every buyer and seller has their own ways of identifying products, so zBay requires both decentralized naming services and decentralized search services.
3. How could you run an auction? There's no peer-to-peer real-time messaging service that can replace the eBay website today — are we planning to bid using email?! So in order to support auctions, zBay requires a decentralized event-notification service.

Why go through all this effort? Is a few percentage points really that burdensome of a tax to even consider the chaos of a decentralized market? Well, before we consider the unique benefits of a zBay, allow me to make a brief analogy to another market we're all familiar with: stocks.

Traditionally, a variable such as a stock price has only one correct value at a moment in time: whatever the specialist on the floor of the NYSE said it is — and then only when the floor is in session a few hours per week. That monopoly power to set the price can be divvied up amongst several broker/dealers, which is what NASDAQ does. But the truly interesting example is over-the-counter trading. Sure, the OTC "pink sheets" in equity trading are a byword for scandal and fraud, but the planet's largest market works the same way: In the trillion-dollar-a-day foreign currency exchanges, the exchange rate is precisely whatever your peers are willing to buy or sell at; there is simply no 'objective' true value at a moment in time. In return for all this chaos — there's a laundry list of currency trading practices that are downright illegal on the stock market! — what we gain is absolute robustness: nothing can shut down the forex markets *because* it's so utterly decentralized.

So returning to zBay, if we could learn how to build one, we could gain a host of advantages:

- Unlike eBay, a zBay could support secondary signals. If "trading" were as simple as "blogging," I could as easily post that I-WANT a "blue die-cast Cadillac XLR model" as bid — and that sort of persistent demand signal would be out there for potential sellers to consider. Today, by contrast, "Items I'm Watching" is not only crude, but dead-ends with eBay Inc. because it isn't aggregated back out for sellers to see.
- Unlike eBay, zBay could support a wider range of business processes than just English auctions with reserve prices. Not only would deconstructing it into its constituent business services make it possible to hook up alternative methods of payment, shipping, or communication, easily scriptable agents could implement alternative transaction types. Flowers *and* chocolates, but not either one alone...
- And of course, it would be our hope that zBay would be vastly more robust. While, like other P2P applications, decentralized control may make it harder to police social norms like preventing piracy or Nazi-memorabilia selling, it's also that much harder to shut down — and certainly ought not require daily maintenance periods.

And while the zBay experiment may sound far-fetched, this future may already be arriving in a very dustbin-of-dotcom-history market: Web advertising. Consider the effective dominance of Google AdSense at the moment: they're running a billion-dollar-a-year real-time auction market a penny at a time. But it's entirely centralized, arrogating the power to match advertisers to content providers solely to Google. Some bloggers are beginning to speculate about so-called "sell-side advertising," where site owners can cut-and-paste appropriate ads as easily as they clip news — and get paid for running those ads directly, not taxed by a middleman.

Ultimately, CN Labs' "campaign platform" of decentralization applies to a wide range of problems. Nearly an eighth of America's economy is devoted to healthcare: here's an utterly decentralized industry we keep trying to force a centralized software model on. Or electricity: pundits paint a picture of power to the people, where we'll have fuel cells in the garage that double as water heaters. How could we possibly control such decentralized power resources? Can we expect our house to turn down the heat when CNN reports a car bomb in Kuwait?

These all sound pretty far-out from 2004, but back in 1994, so did the prospect of ordering new pajamas online — in your pajamas!

In closing, I want to leave you with the thought that CommerceNet is back. In particular, there's a new division that's devoted to developing software that works the way society works: in a completely decentralized fashion. Someday, this may lead to successful new startups; that's how we make grow our endowment. CommerceNet is here to unleash the Now Economy no less than it once did for the so-called "New Economy." We're here to invest in the near-term, through multi-sponsor membership-driven pilots at CN Consortium; through mid-term seed and A-round investment at CN Ventures; and through long-term catalysis of new technology at CN Labs.

Watch this space, folks: see you in 2005!