



Most significant economic challenge to the future of the Internet

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The Internet revolution is far from over. It seems like every day there are exciting announcements of new applications, services and business models. Joost, Web 2.0, SOA (Service Oriented Architecture), grids, cyber-infrastructure are just a very short list of these many new services and applications.

More importantly we are seeing an evolution of business models as a result of these new applications and services broadly labeled as “Enterprise 2.0”. Dan Tapscott, the author of the recent book – Wikieconomics [1] defines Enterprise 2.0 most succinctly as...

“... a defining moment in business history. We are on the threshold of a dramatic shift in the way that firms are organized, innovate and create value. Information technology and new networked business structures are removing the sources of friction in our economy... A new breed of open, networked organization-the Enterprise 2.0-is emerging.

... Collaboration is the new foundation [of this new paradigm]... Normally the term collaboration conjures up images of office workers interacting effectively together. But the concept is changing. By "collaboration" we mean the increasing richness of means by which objects (things, people and firms) can work together enhanced by the medium of the Internet. We have described this as the fundamental transition of the Internet from being a communications platform to a computation platform.”

In the rapidly changing economic scene of globalization and emergence of manufacturing super powers such as China and India, a new economic and business paradigm such as Enterprise 2.0 is needed if we want to maintain our standard of living and national wealth.

At the macro economic level some people have coined this new emerging economic paradigm as the “Wealth of Networks” in tribute to Adam Smith’s pioneering work “The Wealth of Nations” which defined the modern economy as we know it today.

It is too early to say whether networks and Enterprise 2.0 will have the same major transformative effect as were enabled by the critical economic infrastructures in Adam Smith’s time but the impact will be significant nevertheless.

Just as the steamship, railway and modern roads were fundamental to the last major economic transformation of 19th and 20th centuries as witnessed by Adam Smith, we must ask the fundamental question of whether today’s fundamental infrastructure – the network - is up to the task to meet the challenges of Enterprise 2.0 and the Wealth of Networks?

The current last mile infrastructure is a over 50 years old for cable TV and well over 100 years old for telephony. Both infrastructures were built and optimized for a single application. In the case of cable TV it was distribution of over the air TV channels and for telephony it was for



making telephone calls. Over the years many new technologies have been adopted to this infrastructure, in particular, to support high speed Internet to give it capabilities well beyond the designer's original intent. But the topology and basic branch and leaf architecture remain fundamentally unchanged.

If we are to enjoy the benefits of the Wealth of Networks and the new business paradigm of Enterprise 2.0, then not only is ongoing research required into new network protocols and applications as we move from channels to platforms, but new last mile technologies and business models need to be developed as well.

Video over the Internet is likely to be the next big thing as content providers attempt to bypass the cable companies in reaching the end customers. In addition new markets of video delivery such as user generated video like YouTube and Joost will be a burgeoning market. Low cost connectivity as opposed to content will likely be the big economic driver.

A good example of this new type of things is a recent report published by a well known Wall Street Analyst firm -Bernstein Research [2]. Their report claims that the economics of providing dumb pipes to customers is better than traditional video services offered by cable companies. Their analysis shows claim if cable operators chose to be effectively relegated to "dumb pipe" status providing raw connectivity without participation in intellectual property upside from the delivery of video service that the financial metrics are actually better than their current business today. In this scenario revenues would decline significantly, but operating expenses would fall more significantly. Capital employed in the business would also fall sharply yielding much higher ROI and ROE.

The Bernstein Report also argues that a "third network" delivery mechanism (WiFi, 3G, BPL, etc) is very unlikely if video file distribution becomes one of the major applications on the Internet.

In Canada, we have reached similar conclusions where raw connectivity is far more important than managed services from a carrier. Almost a decade ago we introduced the concept of condominium and customer owned fiber networks which radically reduces the cost of Internet connectivity for business, schools, hospitals and universities.[3]

Condominium fiber networks operate on the same principle of condominium apartment buildings where individual organizations own their separate strands of fiber within a large fiber optic cable. Specialized condominium fiber construction companies build and maintain the fiber cable. There are many companies [4] around the world who specialize in this type of business. CANARIE, in partnership with its research and business partners has also extended the concept of customer and controlled networks to long haul optical networks and other facilities through a technology called User Controlled LightPaths (UCLP) [5].

We are now hoping to extend this business model to the last mile. CANARIE is working with a couple condominium fiber construction companies to identify new fiber to the home (FTTH) construction techniques and business models to provide raw connectivity to home owners that does not restrict them to the current service offerings of the telephone and cable companies.

To address the problem of challenges of developing a FTTH business case, especially in existing housing developments (brownfields), the condominium fiber contractors are in discussion with several/gas electric companies on a more novel business case to market and sell the fiber.



The basic concept is to bundle FTTH as a premium on a customer's energy or gas bill. If the consumer reduces their energy consumption, (the higher cost per kwh because of the broadband premium would serve as an economic incentive to reduce consumption) then they may end up with free broadband and the added benefit of lower reduced green house gases. We have nicknamed it "Green broadband" or "Al Gore broadband"! As well additional revenues can be made in brokering CO2 credits because of tele-commuting, and other energy saving ideas.

The energy retailers make money on the arbitrage of the power and selling carbon emission credits. The FTTH raw connectivity is a loss leader. There is a hell of lot more money to be made on power arbitrage trading and carbon emission credits then there ever will be with broadband.

Ultimately broadband services and the next generation of the Internet are likely to be free. We are already seeing this in some jurisdictions with companies like Inuk and Sky (in partnership with Google) offer telephony, free broadband (up to 2 Mbps) and free cable TV. They make their money by selling eyeballs to the traditional over the air broadcasters.[6]

The new exciting Joost announcement from the people who developed Skype and Kazaa is another good example of this approach. They promise to offer far fewer TV commercials with their service, but their real strength is a backend ad engine that can pinpoint viewers by location, time of day, viewing habits, and opt-in profile information to serve up a perfect advertisements. In theory, that kind of control will make the network much more valuable to advertisers. This offers advertisers targeting they've never dreamed about in the TV world.

If broadband services like telephony and cable are going to be free, the challenge then is to find a way to build out and pay for the infrastructure. This is why new business models and architectures such as user owned and controlled optical networks are important - you don't want to be in the business of maintaining service level agreements for services that are free or have high operational costs. The traditional approach for justifying FTTH is to deliver "premium" services, or services delivered through a QoS channel to extract additional revenue (and thereby create non-neutral networks). But if the services are free it is going to be hard to extract that revenue to justify the cost of the network build out.

Governments have a critical role to play to ensure funding is provided to research programs to build the new Internet network modalities. But just as importantly governments should encourage businesses and entrepreneurs to explore new business models and architectures that will enable this new economy based on the Wealth of Networks. But we do not believe this means that governments (at any level) should own or operate networks, or place conditions on the operation of networks such as network neutrality provisions. However, they should enable a level playing field by ensuring that the passive infrastructure such as poles, conduit and messenger wires are accessible to all.

[1] <http://www.newparadigm.com/>

[2] <http://www.bernsteinresearch.com/>

[3] <http://lists.canarie.ca/pipermail/news/2006/000359.html>

[4] <http://lists.canarie.ca/pipermail/news/2006/000338.html>

[5] www.uclp.ca

[6] www.inuknetworks.com