How The
Television Will Be
Revolutionized:

The Future of the iPad,
Internet TV, and Web 3.0
(The Metaverse)

Plus:

Other Uses,
Political Challenges,
and How Tablet PCs
Could Have Started
in 1993.

John M. Smart

How the Television Will Be Revolutionized
The Future of the iPad, Internet TV and Web 3.0 (V 1.7, May 2010)

Main Article

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Today, seventeen years after the Apple MessagePad ("Newton") debuted in 1993, tablet PCs like the iPad (picture right) are poised to move out of Gartner's trough of disillusionment onto the slope of enlightenment, and onward to the plateau of productivity. The iPad's success (already over a million units sold), along with its coming competitors, will open up significant new opportunities for ubiquitous computing. Uncomplicated and easy to use for brief tasks, particularly in a multitasking environment in the home, tablets will seduce us into even more online social interaction, eReading, eLearning, gaming, and other activities, and bring the world another small step closer to wearable computing.

The iPad's Killer App is also lurking right ahead: the tablet PC is an ideal *internet video viewing platform* and *universal media interface* to manage video viewing activity on the *media centers and internet televisions* which are now beginning to arrive in living rooms around the world. This is also the tablet PC's largest single market. It can be predicted to eventually sell *tens of millions* of tablets annually as media center computers and iTV roll out everywhere in the 2010's.

This use is also of unique social importance due to the sheer amount of time that all of us, irrespective of country, spend on viewing video and surfing the web. While smartphones and laptops can and are being used by a few as "dumb" remotes today, the large, high-resolution screens, powerful processors, touch interface, and comfortability in the lap of the tablet PC make it an ideal device to organize how we interact with thousands of online news, entertainment, and educational video, audio, and text channels in the home and office. We can both expect and demand tablets to play a critical role in the debut of true internet television in coming years.

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Consider the following facts:

- 211 million TVs were sold in 2009. 228 million are projected to sell in 2010, with 79% being digital-ready LCD TVs. While these numbers pale in comparison to cell phones sold (1.2 billion last year) they are just slightly behind total PC sales, which were 298 million in 2009 (about 55% of these being laptops). There are presently 2.3 billion TVs in the world, and 6.7 billion people.

- Fully 25% of U.S. TVs sold in Jan 2010 were connected by consumers to the internet. 40% of this 25%, or 10% of TVs sold, came "internet ready." The rest, and all our older TVS, are being internet connected via set-top boxes, media centers or DVRs, as well as game consoles and DVD players.

- There are presently roughly 20,000+ streamable internet TV channels, waiting patiently to be connected to internet-enabled TVs. With the accelerating popularity of YouTube, Metacafe, Vimeo, Viddler, etc, we can expect *hundreds of thousands* of specialized channels by 2015.

- A few companies, like [Boxee](), have had easy-to-use, open source internet media center software since 2008, and are now developing set-top boxes for 2010. The best of these media center devices include social networking, peer viewing, and chat-while-viewing features, and deliver a far more rewarding and personalized viewing experience than cable TV.

- At present, *all* of these media center devices currently use a "[Ten Foot User Interface]()" and dumb remotes, displaying their viewing options in large characters, with low resolution, on a distant TV screen. Only one remote can be used at a time, so individual users can't do their own browsing for what they might want to watch next, or multitask on their personal tablet-remotes. None of these use the advanced voice command and search software that we find on our phones. In short, the television is waiting to be revolutionized by next generation media centers and tablet remotes.

With the right software, a tablet can rapidly organize the complexity of 20,000+ potential channels for the viewer. It can deliver each of us a highly personalized viewing and learning experience while we are in the

same room with others who have their own tablets. It can allow multitasking options so rich that we haven't even fully visualized them yet. Here is a rendition by ASF artist Marlon Rojas (Fizbit.com), of what such a tablet will look like. Getting these is just a matter of will, talent, and time.

Imagine a tablet TV remote that can display your "top 50" favorite channels or media titles (five wide and ten deep per screen), by subject of interest and reputation, as small icons with customizable 10 to 14 point text captions, and with another 50 channels

or titles just a tap away, and all fighting to get higher in your stack depending on the rating and viewing activities of yourself, your favorite reviewers, and your trusted friends. This can also be done on a smartphone and a laptop, with the appropriate software installed, but the smartphone screen is much smaller, and the laptop has a keyboard, which is unnecessary for this use. Tablets are the truly ideal form factor for an intelligent internet TV remote.

Imagine a tablet that is *voice enabled*, making video content just a query away. Imagine a tablet, working in conjunction with a media center, with *collaborative rating and filtering systems*, to get a highly personalized set of options for each viewer. Imagine an extensive set of *social viewing features* (social network integration, video and audio conferencing, realtime chat, peer to peer video, etc.) allowing you to watch videos with friends, and see what various friends are watching right now. Imagine *customized caption streaming* below the TV video or on your tablet, so you can get secondary content of your choice. Imagine using your tablet to *check the internet* for more on any subject while you are watching the large screen, using voice or typed queries, like folks with Wi-Fi enabled laptops do in their living rooms today.

To democratize the revenue model, imagine a mix of *micropayments* you can send to channel aggregators and individual content providers, of unobtrusive and personalized *commercial breaks* (which can be automuted and with the ability to like, dislike, and permanently block commercials of any type) and *per-click revenue and advertising*, each of which will provide significant income to hundreds of thousands of video providers, and greatly broaden our digital producer ecosystem. Rather than the *mass-push* system we have today, imagine a balance of both *targeted push*, where produces of better videos, and their advertisers, will send suggestions for web reading and viewing to your tablets, in context, as you watch a video, listen to audio, or read text, and *pull*, where you control how much of this you want to receive, and are able to quickly navigate and select from the growing universe of content, and invite others to make it a social viewing experience.

Youth today often multitask when they watch television, and audience share for Network television has been trending down for over a decade as our video options (DVD, DVR, Netflix, the web) have grown. But we all still watch a lot of television. According to the [American Time Use Survey](#), in 2008 the average U.S. household spent roughly 2.9 hrs/day for men and 2.6 hours for women watching television each day. *Television viewing is the single largest discretionary activity U.S. residents engage in daily, accounting for fully half our daily leisure time*. It is an easy thesis, therefore, that improving television's quality, diversity, and relevance is a uniquely important target for social progress.


The solution we need is Web 3.0, an internet that is robust enough to deliver full-screen NTSC-or-greater quality video to our homes. Digital Video Recorders (DVRs) like TiVo (picture right) were great for their era, but the world's video watchers are now ready to move on. It's time for a media center that connects us to the *world's collection of video content*, not to a choice-controlled corporate zone like Network TV or the walled gardens that big film studios have built for us on cable.

 To deliver Web 3.0 to the world, and release its full social value, we will need features like the following:

- **Voice searches** on our tablet, laptop, and smartphone remotes. If you've tried [Google Voice Search](#) for iPhone and Android, you understand the future of video organization and search. This is an incredibly powerful interface, and it gets better every month, the more people use it, just like web search. With voice search, a universe of choice is just a spoken phrase away from every viewer.

- **Collaborative rating and filtering systems**, like Netflix's recommendation engine. We need global collective intelligence to help us surface the most important video for the time and context. Imagine a small ratings panel appearing at the side of your video, allowing you to rate it, and to see friends and others latest ratings and rankings. How much low-quality crap would that hide for you, forever, once you'd set your filters? In an ideal world we could watch the next State of the Union address, less than three years from today, using a realtime ratings and ranking screen to the right of the video, allowing each of us to give feedback, and see our favorite pundit or NGO's thoughts on the truthfulness and value of what we are hearing. Forget the post-game talking heads. It's time to move on to realtime analysis, by the analysts of our choice.
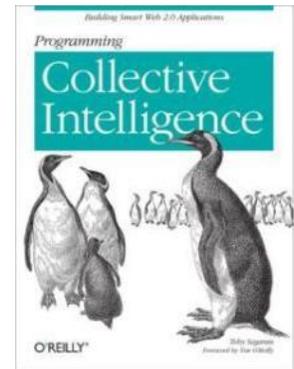
- **Social viewing, social networks, and realtime chat.** We need the ability to do social viewing, to see what our friends are watching right now and have watched in the last few days, to see their ratings, to cowatch with them, to have limited sharing of our DRM protected video and unlimited sharing of our DRM-free, creative commons video, to find others who rank video the same way we do, like LibraryThing does for 1 million book lovers today, and to form community viewing and discussion groups for all kinds of specialty content. Social networks, with realtime chat, will be the glue that binds the social viewing experience. Facebook TV.

- **Realtime captions**, streaming at the bottom of all your video, and a marketplace for these. Think of all the specialty analysis people could get for their favorite political, news, business, sports, and other shows. Most video would be enhanced by context sensitive streaming. Not just comic relief, like MST3K, but channels for commerce, social activism, research, etc.
- Both push and pull content (links, video, text, etc.) that can come to our tablets, in context, as we are watching our videos. Tomorrow's videos simply need a standard, or a few competing standards, that will allow such channels, in synch with the video stream.

- **Micropayments, Better Commercials, and Per-Click Ads**. The ability to pay very small amounts to either individual content providers (on occasion) or to channel and content aggregators (most typically) for recurring or point of use access to a universe of specialty media content, with a tap of the finger. Just as there are today hundreds of thousands of eBay Power Sellers, who make *full time incomes selling specialty products* online today, we need hundreds of thousands of independent video producers and aggregators, who make *full time incomes creating, curating and remixing specialty video, audio, and other media* on topics that we care about. We also need standards for producing user-controlled commercials on these internet video channels (to be discussed shortly) and the option for unobtrusive, personalized per-click ads.

- **An open video markup language (OVML)**, which is an open source semantic standard for tagging every bit of video, whether program or advertisement, embedding licensing info and even time coded content (further info, ads, etc.) so we can choose when and how to display it in our homes and offices. As David Siegel describes in his incisive book *Pull: The Power of the Semantic Web*, 2009, emerging semantic standards are revolutionizing businesses around the world today. We need a rich standard for all our online video media, developed by user-centric nonprofits.
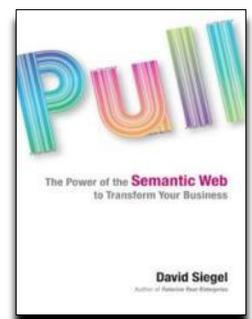
The last two requirements seem particularly important. We need micropayments, better commercial models, and per-click ad revenues to pay all the content providers the incomes they need so

that we can massively expand the variety and value of internet video for all of us. With the inexpensiveness of video production today, many young producers of ultraspecialty content need just $30,000 a year to live and pursue their passions, and then be discovered by some internet television channel producer. That is a far cry from Network TV's present budgets and overhead.

Developing a great OVML standard early will also be critical, because it this allow us to find and decide just what kind of video content we want to display, to rate and share it when we watch it, and to control how and when we view it. Industry consortiums like the "Open" IPTV Forum, formed by big TV makers and telcos in March 2007, like to tell us they are hard at work developing standards for interactive, personalized IPTV services. But all they've done over the last three years is create a web platform to deliver more DRM-protected content. Their standards don't empower users or democratize content production, rating, sharing, or editing. Ignore this group and other equally misnamed ventures, like the set-top box maker "Open TV". In their vision of the future quality video is not increasingly ubiquitous, open, and free, but remains a scarce resource, monetized by the few, and advertisers remain unfettered and out of control. It's time for a change.

Look instead to groups like the Open Video Alliance, who are advancing open source, royalty free standards and technology for web video. This movement is funded by companies whose business models revolve around openness, like Google and others, and is presently overseen by independent, user-centric nonprofit foundations, like Mozilla and Creative Commons. The new WebM open video format and free VP8 video compression technology license released last month by Google, Mozilla, and Opera for HTML5 video is a great example of an open video advance. We will need many more such advances in coming years to win this battle, and to gain control, for the first time, of the television and advertising content that streams into our homes, offices, and portable devices. Please give the OVA and orgs like them your time and money, and please develop more groups to complement them. Such groups will be critical to Web 3.0 development, and strongly deserve greater funding and support.

Once the appropriate Open Video Markup Language (OVML) standards have been developed by civic-minded nonprofit standards organizations and employed on these new open internet television devices, we'll be able to rate and filter all the video we receive, and share, edit, and remix all the video that is creative commons licensed. These standards must also aid in indexing and marketizing copyrighted video content that has *simple and reasonable royalties, licenses, and limited DRM attached*, and do in a way that helps democratize, rather than monopolize content production.

OVML should also support time- or at least section-coded annotations to the video, and in the future user-annotatable tags within the raw video stream, so that one can identify or tag scenes, shots, locations, and objects, and follow or provide *links in context* to other video, data, or documents. See Zhou and Jin, Principles of Video Annotation Markup Language, 2004, for one idea for longer-term future standards in open video.

Advertising on Web 3.0 won't go away, it will just get much more personalized and much less obtrusive. These two trends, *personalization* and *unobtrusivenesss,* are inevitable in all future media, and the most foresighted advertisers are already embracing them, not fighting them. As one example of what Web 3.0 television might will look like just a few years hence, many of us will be willing to watch better-funded content on a more popular channel in return for regular commercial breaks. We recognize the valuable role advertising plays in funding premium content. But here in 2010, we also need the ability to decide *what* commercials we watch, and *how*, and *when*, and to *talk back* to the advertisers as we choose. It's time to end the one-way messages, and start a conversation.

We need to be able to "*like*" and "*dislike*" both video and ads with a simple tap on our tablets, so that collaborative filtering of each can begin to emerge on the better channels. Once we are sick of any ad, we need to be able to *block it* from repeating by clicking as it is playing, which will give the admakers incentive to make more interesting and relevant ads. When we block ads, we also need the ability to *tell the advertisers why*. If I block Coca-Cola for a month, a year, or for the forseeable future, I need to be able to tell Coke I'm not going to watch any more ads until I see a few talking about what they are doing about childhood obesity and whether they've finally gotten the sugar-water out of all their dispensers in the schools. If an advertiser has coded their contact info into the OVML for the ad, our messages will be forwarded directly to the advertiser. If not, or in addition, such messages can be aggregated by Web 3.0 platforms and stored in the cloud. It would be great to see anonymized public copies of these messages available to all of us to view and mine, unless we set our feedback settings to private, as we may at times or in general.

A particularly popular option for Web 3.0 ads in the home will be *automuting*, the ability to have all television commercials *play either quietly or silently, with or without captions*, so that we can more easily have conversations or do other useful things (email, web reading, social networks) during the commercial breaks. When we have tablets or laptops in our laps, or smartphones in our hands or on our bodies, multitasking during commercials will be both more fun and more productive. With the automuting feature on, the automatic return of normal volume TV audio would be the signal to look back at the big screen. This *less obtrusive advertising model* will work very well for the coming lean internet television producers of the 2010's, who will want to get us to tune into and recommend their channels, and who will be very willing to play by user-centric Web 3.0 rules. If such a model doesn't work now for Network TV, they'll keep losing share to this platform. Eventually, they will have to give in.

We could go on, but this partial feature list should be enough to make the point. Television is about to be revolutionized, and tablets and Web 3.0 media centers will play a critical role. As we discuss in the supplementary reading, a number of open-source players, like Boxee and alternatives, are going to lead the way in this revolution in the next few years. Information companies like Google, whose core business models revolve around growing an open, rich web, will also drive this change. Be on the lookout for Google TV, a product we may see even this year. Major television companies, like Samsung, Sony, and LG may also be among the first to launch open platforms, once they see Web 3.0 begin mass adoption. Even proprietary computer companies, like Apple and Microsoft, who are presently trying to build walled gardens of video content, and whose first offerings are *not likely* be very open, must also increasingly champion Web 3.0 as the years go by, as once anyone provides it, we will all increasingly demand it.

Cable companies, Network TV and their advertisers will try to stall the emergence of Web 3.0 as long as they can, as it will fractionate their markets, disaggregate their content, disintermediate their supply chains, shrink their margins, and remake all the smaller survivors into leaner, and more web- and customer-centric companies. This is what Joseph Schumpeter called creative destruction, the periodic need for big old competitors to periodically give way to newer, smaller, and more user-centric competitors, under the inevitable forces of technological innovation. It is an amazing saga to watch.

We will see more cable offerings like the Xfinity Remote for Comcast, a browser-based remote control for Comcast's "11,000 On Demand movies" and "20,000 online TV shows and movies", which can be run through the iPad or any other web device and will have limited "social viewing" features (no cc-licensed video sharing, just recommendations). But at $70/month (or whatever premium cable costs these days), *plus* exorbitant costs for each movie download ($5/movie? $10?), plus *no sharing of, access to, or promotion of the universe of free web video*, this is not the device we need or deserve in 2010. Don't be fooled.

Instead, while you are waiting for real Web 3.0 devices to emerge later this and next year, keep watching movies at your local Redbox machine (picture right), which can be reserved ahead online, and whose $1.00/movie rental cost is reasonable. Redbox and imitators are greatly disrupting the studios at present. In fact, they have had such a financial impact these last few years that the three biggest studios, 20th Century Fox, Warner Brothers, and Universal, all refused in

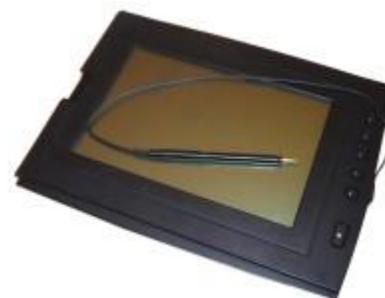2009 to sell movies to Redbox until *28 days after their arrival in human-staffed stores*. That's just unfair discrimination, plain and simple, and may be an antitrust violation as well. It would be illegal to engage in such channel discrimination in a more competitive and democratic country than the U.S.A. is today. Unfortunately, we don't live in that country at present, but you don't have to condone the Big Studio's behavior.

Be sure to supplement your Redbox habit with Netflix's Watch Instantly (picture left) which at $9/month for unlimited streaming of thousands of movies, is another fairly priced and seriously disruptive solution. And for your home media server, buy a Boxee box (to be discussed shortly) instead of a cable box. Free your television.

The big media company's desire to keep us walled off from the open web will become increasingly irrelevant with time. Once we have micropayments and OVML , and have become accustomed to control over our media, if the networks don't use OVML on their broadcasts, they will continue to lose audience to true internet TV, which we will increasingly view when we are unimpressed with network offerings. *All an enterprising startup needs to do, to open up our living rooms, is build a better internet TV, using an extendable, user-centric open media markup standard, and deliver it for an affordable price.* We can simply route around them, and they'll eventually come around.

Given the reluctance of larger media and computer companies and their advertisers to deliver the full feature sets of Web 3.0 as described, and given the importance of consumer choice in determining the openness of the offerings we see next, *the most important role in this revolution will be played by each of us*. To be the change we wish to see, *we need to demand and buy increasingly affordable, powerful, and open media center + tablet platforms*, first from the smaller, more consumer-minded players in the next few years, and from the larger players in the years to come. It's going to be a very exciting time.

As I am a futurist, it is important to conclude this piece with a little hindsight, to balance our perspective. Why has it taken so long for a tablet to succeed? The hype cycle for these particular devices began way back in the "pen computing" craze in the US of the late 1980's to early 1990's, with tablet computers like Pencept (1985), GRiDPad (1989, picture right), Poqet (1989), Momenta (1991) the IBM ThinkPad 750P (1993) and the Apple "Newton" MessagePad (1993, picture left). For strategy implications of this inevitable (developmental) cycle, you might enjoy *Mastering the Hype Cycle*, Jackie Fenn and Mark Raskino, 2008, and more generally, *The Well-Timed Strategy*, Peter Navarro, 2009.

Our intuition might say the problem was simply timing. But the x-axis of the hype cycle (picture right) is actually not time but cumulative experience. It is cumulative experience with any information technology, or *research done, units sold, and knowledge gained* that allows us to improve its capacity, add new features, and decrease its cost. So the way to master the hype cycle, even more than waiting for the "right time" to launch, is to develop and market the *right first-generation product*, to the *right first clientele*, and start climbing the experience curve earlier and faster than everyone else.

Under the visionary Steve Jobs, Apple has pulled off this particular trick many times. They did it beginning in the late 1970's with the Apple II, and in the mid-1980's with the Mac, which tipped millions of us into elegant, easy-to-use personal computing and desktop publishing. They did it again in the late 1990s with the iMac, in the early 2000's with the iPod and iTunes, and in 2008 with the iPhone and App Store. They are well on track to doing it again with iPad in 2010. And as I describe in the supplementary reading, they could have done it with the tablet PC in 1993, with just a few critical strategy changes in the launch of the Newton MessagePad.
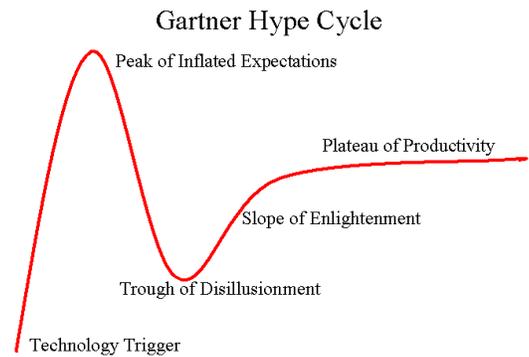
The lessons of Apple's continued success bear repeating, as so few organizations heed them even today. Technology users want lots of *high quality choices* (having our cake), *beauty, simplicity, and dependability* in our interface (eating it without stress), and brands that will *authentically guide us* to meaningful new innovations, and we will pay a premium for that combination. *Beautifying, simplifying, and making dependable* the interface to any ecosystem that has lots of choices, figuring out how to bring the *quality choices to the front,* and authentically convincing clients that you are a *brand that stands for these things* have become the *most critical gating factors* for user adoption in a world where people feel overwhelmed by information, complex choices, and accelerating change.

Considering this formula helps us understand that just being first with great technology generaly isn't enough for market success, without the other factors. We remember that portable MP3 players emerged in 1998 (Saehan's MPMan, 1998) and got their first limited popularity with Diamond Rio's PMP300 (1999). But it wasn't until two years later (2001) when the Apple iPod finally captivated millions with its beauty, simplicity, dependability, and most importantly, quality choices available via its content distribution network, iTunes. Likewise, with tablet PCs, the French company Archos has been making beautiful, dependable, technically advanced portable video tablets with TV management capabilities since 2006 (Archos 9, 2009, is picture right). Since 2007, such tablets have had niche penetration, for example as rentable video viewers on airlines. But without a content marketplace that delivers a lot of *quality video choice*, such tablets can have only limited success. Now if Archos, HP, or Toshiba (all tablet innovators in recent years) had teamed with Netflix or YouTube in 2006, to make both a DVR-interfacing remote and a low-cost and DRM-free internet video marketplace to rival or exceed iTunes, Apple would today be playing catchup in this space. But they did not, and so Apple leads the way yet again, well-deserving of their reputation as innovators.

So as the "magical" iPad launch plays out in the U.S. this month, we can all appreciate the blend of quality *choice, beauty, simplicity, dependability, and innovation* that led to this event, and enjoy the relaxing billboards, the clever ads, and the wafer-thin multi-touch tablet itself. If you get a chance, play with the iPad in the Apple Store. It will put a smile on your face, and if it doesn't, pinch yourself. It is quite beautiful, simple, dependable, and innovative. Even this early in its launch, it is also a clear success. The $500 Wi-Fi version sold 500,000 units in the U.S. in the first week of sales. With the 3G- and GPS-equipped version now out, and application multitasking in the new iPhone OS 4.0 (for the iPhone, iPod Touch, and iPad), a million iPads are now in users hands and homes after the first month of sales. With Google+Verizon, HP, Toshiba, Sony, Motorola, Dell, and others all planning Android tablets this year, imitation is the sincerest form of flattery.

Just how far beyond a million units can the iPad and its coming competitors go this year, worldwide? Credible estimates range from 3 to 6 million for the iPad, and perhaps as much as 7-10 million for the entire class. How soon can the iPad begin to approach the success of the iPhone for Apple, at 40 million cumulative units to date? That depends on the *market size* and *use cases* we can find for the iPad's form factor, the wafer-thin tablet PC. We've discussed one very exciting use case so far, integration with the internet TV media center, one which could support tens of millions of sales in the U.S. alone as early as next year, a use mostly overlooked in coverage of the iPad to date. We mention a number of others in the supplementary reading. The future of the tablet PC is very bright, and thanks to Apple, it has tipped into the beginnings of mass adoption this year.

We futurists try to see important things just a little bit earlier than others do, and to advance the dialog on those things so that we can all get to a better future faster than would otherwise occur. Like we say in our Future Salons, free monthly meetups where folks engage in dialogs about the possibilities of tomorrow, each of us can do our part to make the world we wish to see. We all need to keep on "Boldly Creating a World that Works for All." In that spirit, I hope this article helps any who might benefit from it. Humanity has advanced a long way with the Web since its birth in 1993, and if present trends continue, our digital future will be an even more democratic, innovative, and sustainable. I look forward to seeing you there.

Feedback? Criticisms? Let me know at johnsmart@accelerating.org. If you like the article, please circulate it to your friends in the appropriate industries. Thanks for reading.

Want More?
The following are available as Supplementary/Background reading:

- **Five Steps in Web Development – A Development Hierarchy for our Global Digital Environment**
- **How a Media Center + Tablet Might Emerge. Boxee, Google, Apple, Microsoft, and Other Players**
- **Other Uses of the Tablet PC (Social, eReading, Games, Home Automation, Laptop Substitution, Clipboards, and App Experimentation) and Opportunities for Development.**
- **iPad Features We'd Like to See Next . A Small Wish List for Next Generation Machines**
- **An Alternate History: How Apple Could Have Launched a Successful Tablet PC in 1993.**
- **The Battle to Control the Living Room: And Why Our TV Needs to Be Improved**
- **Helping Apple Become More Open: Some Ideas for Apple Lovers (All of Us, At Heart)**
- **Barriers to IT Innovation and Competition in the Plutocratic U.S. of 2010, and What We Can Do.**