## Dave Clark: Innovation vs Stability

Is innovation always a good idea? Do we need innovation everywhere in the eosystem? The internet is a series of platform layers, each of which provides an interface to services that are used by the layer above. But it is the sustainability and thus predictability of the lower layer that invites innovation at the layers above. An app developer does not want to sit on top of services that are afflicted with a bad case of creative destruction. The layers above thus need the ISPs to invest in their infrastructure, not to innovate. But what are the motivations to invest? What is the return on investment and how is it derived?

Before answering these questions I wanted to make a list of all the aspirations that people had re the future of the Internet. I don’t necessarily agree with all of them, but I wanted to sort them out.

1. Reach: The Internet should reach to every person by some means (fixed in the developed world, wireless in the developing world)
2. Ubiquity: The Internet should be available to us everywhere – seamless mobility
3. Evolution: The Internet should continue to evolve to match the pace and direction of the larger IT sector. According to Moore’s Law the Internet should get better every 5 years
4. Uptake: The Internet should be used by more of the population. There are people who clearly do not want to use the Internet. Why should we care about this? Many people are trying to convert non-users.
5. Affordable: Cost should not be a barrier to the use of the Internet. There’s a tension here between making it affordable and investing enough to make it ubiquitous.
6. Trustworthy: Did not include “security” on the list because it’s an under-defined word, there is no single concept; it’s a battle of conflicting interests. The Internet should provide experiences that are sufficiently free of frustration, fears and unpleasant experiences that people are not deterred from using it.
7. Lawful: The Internet should not be an effective space for law-breakers. The government cares about that.
8. National security: The Internet should not raise concerns about national security
9. Innovation: The FCC wants the Internet to be a platform for vigorous innovation, and thus a driver of the economy. You need the next aspiration—generality--to achieve this.
10. Generality: We pursued generality as a goal when we built the Internet. The Internet should support a wide range of services and applications. This should be a component of innovation.
11. Unblocked: Internet content should be accessible to all without blocking or censorship.
12. Choice: The consumer should have choice in their Internet experience. This is worship of competition. A lot of people think of choice as it is manifested in prohibitive choice; that’s when you discipline the market to get whatever aspiration you think you want. Some people think choice will lead to generality or unblocked or innovation – neither innovation nor competition is pixy dust you can sprinkle on a problem to make it go away.
13. Redistribution: The Internet should serve as a mechanism for the distribution of wealth among different sectors and countries. The economist Hal Varian once said to me the Internet is about routing money, routing packets is a side effect; you really screwed up the money routing protocols. There are micro disputes like, should Netflix pay Comcast? But the bigger disputes are if you go to the developing world, they’re saying we should xxx settlement on international data transfers. Or, the European operators are saying, there’s some high-value content going across my network, why can’t I charge based on value as opposed to bytes? There are tremendous disputes in this space.
14. Unification: The Internet (and Internet technology, whether in the public net or not) should become a unified technology platform for communication. This mostly applies to the operators. It’s the value of IP technology as a uniform technology platform—you can do everything on top of IP.
15. Local values: For any region of the globe, the behavior of the Internet should be consistent with respect to its core cultural/political values. That’s going to happen of necessity.
16. Universal values: The Internet should be a tool to promote social, cultural, and political values, especially universal ones.

My main question is, why aren’t all of these aspirations happening now? The main problem is that each of these aspirations trigger a dispute. What does Trustworthy really mean? Reach depends on how you define broadband. The FCC just redefined broadband download speed from 4 megabits to 25, which instantly changed the landscape of competitive access. The issue with Reach, therefore, is not how many house are touched, it’s defining what they are touched with. The ICU uses a definition that it has to exceed 250 kilobits/second. Which makes the developing nations feel really good. But it’s a useless measure in the developed world. So there are disputes over whether these are the right aspirations; the definitions of the terms used; how you measure things, etc.

The question I would ask is what are the 1-2 things you most fear, what could go off the rails in the next couple of years? Is it the complete failure to remain Unblocked? To connect the developing world? What is it that you need to have to mitigate that concern. Is it innovation? Competition? Or solving a coordination problem? Providing ROI? Is it mitigating a liability concern?

Re our theme of Responsible Innovation: If you think it’s acceptable to envision the future and strive for it, you have to ask what are the right tools to do it? And so my point is that I don’t think worship of innovation and competition is necessarily going to get us to the right place. In the private sector, I was scolded by the Intel committee member when he responded to my report for the National Research Council. He said you cannot have a vision of the future. Industry defines the future by exploring all possible vectors, and the ones that die, die, and the ones that succeed, succeed. The future is whatever this random exploration gets us, and that’s innovation.

Dave Oran: XX made a comment in 2000 that the Internet is designed. All we’ve been doing is exploring all the other worst parts of the design space.

DC: The Intel guy who said this to me is the same guy that Intel sent to Washington to establish a national vision re broadband because Intel figured out they could sell more chips. So even aspirations for the future are strategic. There was a paragraph in the national broadband plan – “instead of choosing a specific path for broadband in America, this plan describes actions that governments should take to encourage more private innovation and investment. The policies and actions recommended in this plan fall into 3 categories: 1) fostering “innovation” and “competition” in networks, devices, and applications (that’s two bits of pixie dust), 2) redirecting assets to government controls or influences in order to spur investment (as near as I could tell, that meant letting people put cell towers on top of public buildings), and 3) optimizing the use of broadband to help achieve national priorities. That’s how the government thought it was going to drive to the future.

Ana Serrano: Do you think it’s important to be explicit about what’s private vs public space on the Internet? Because part of the issue around how do we design for all of those aspirations, at its heart, has to do with who ends up controlling which of those spaces,

DC: I think that’s one of the deepest questions about the future. If you read what the broadband plan said, after stating all sorts of visions, it’s basically whatever the private sector builds. To me that was throwing in the towel. Other nations have said the Internet is important enough we ought to have some discourse about what we as a society want it to be. That’s a dangerous conversation, which is why lists of aspirations are so contentious. I actually think that discourse is worthwhile and I’d like to encourage the discourse. I don’t know what that venue will be. And it will be different for every country, and it will lead to this local values, diversification.

Andy Lippman: One of the ways of thinking about Dave’s list is to ask who is the Internet for, who owns the Internet? If we said access is a human right vs a commercial right there would be a different framing for the discussion on the important characteristics of the Internet, and maybe we’d build an internet vs a yuppy-net, and that’s what Uber, Airbnb, Kickstarter, etc. are all about.