



Stanford eCorner

Take a Chance at the Edge of Innovation

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Universities and research labs force people to live on the edge of technology, says John Hennessy, President of Stanford University. And this exploration, he points out, helps them to uncover that which is not obvious. Hennessy recalls a case study to prove his point. Thinking back to his first interaction with the Yahoo! prototype, he notes that the company's founders were motivated by a need for real navigation. He also talks about how the meaning of search evolved as the web's user base and content grew, and that Google's approach better met that market need. Both companies identified real opportunity and acted accordingly.



Transcript

The other thing that I think universities are good at, research laboratories often try to do, is to get people to live on the edge of technology. When you push yourself to use the newest technology, to try the new thing, to use it and explore what its potential might be, you often discover things that are not obvious at the beginning. I still remember going over to see what was the first prototype of Yahoo! running in Jerry Yang and David Filo's office which at that time their office was in a set of trailers because we'd run out of office space in the building they were in. And they were in a set of trailers which just always reminds me that innovation can happen anywhere. That entrepreneurial drive can begin in a trailer office that was piled with Coke cans and pizza boxes. That was perhaps one of the most important ingredients. But there was the prototype of Yahoo! and what had happened? Very simple, the net was growing, Dave and Jerry were surfing it because they thought this was an interesting new phenomena and said, "We need to begin to organize the sites on the net so that we can share them with other people, with our friends. And so that we can come back to the sites that we found interesting." Whether it was to order pizza over the Internet, find a movie directory, look up something, whatever it was. The key thing was they had access to the Internet, they had access to the World Wide Web before that access was broadly available. They were living at the edge trying out this technology before there was a giant user community.

And of course, discovered that certain things were necessary, ways of navigating were necessary in order to make it successful. This kind of innovation where young people come in and try something different. Now when Larry Page and Sergey Brin started working on Google, they didn't start with the problem of doing Web search. They weren't working on Web search. They were working on the problem of searching digital libraries and in fact, their work was funded by the National Science Foundation to do library search. Now, what did they observe about library search? Suppose you want to look up a book by John Hennessy and you want to know which book is the most important. How would you figure that out? Often in research papers and other work, the number of citations of a particular work is a good indicator of how important it is. That concept transports to the Web. The number of people that point to a given website are an indication of that importance of that website. And then you can take that, think of the Web as a giant graph and do a transitive closure on it.

And that's basically the core algorithm that started Google. What they were willing to do though was to say, "There are lots of Web search engines out there but we think we can do something better." Because those other Web search engines produce

tens of thousands or in some cases hundreds of thousands of hits. But the one I want may not be anywhere near the top of that list. What they observed is that they could do a much better job of Web surf despite the fact that there were already companies out there selling search engines. So that willingness to try to do better even though somebody's already been there is important. And I have seen time and time again that characteristic comes from young people who are willing to go down the path, unaware of the fact that other people have been down those paths and maybe find new opportunities along the way.