

Internet of Things = Even Bigger Data: Lessons from a decade+ experiment in big data.

David G. Belanger
PhD, Stevens Institute of Technology, USA



Abstract

Over the last several years, we have seen the explosion of technology and applications driven by data generated by what is known as the “Crowd”. We are now seeing the emergence of another, much larger, “Crowd”. This one made up of machines communicating with each other, as well as with humans. It is often called the Internet of Things. This will drive some dramatic changes in how we think about the value of big data, and how we approach its application.

Informed by 15 years of leading an internationally known program using big data (AT&T Labs - InfoLab) and 2 years of academic projects, this talk looks at ways big data will evolve over the next several years, in part by taking advantage of the Internet of Things.. These include: vast expansions in the amount and availability of data; maturation and expansion of the tools available – with particular emphasis on streaming techniques; and, most important, understanding new categories of applications made possible by these techniques. Much of our experience is with “data in flight”, that is data which is moving in large quantities over communications networks. This type of data is characteristic of the Internet of Things, and lends itself to real-time detection and control applications over very high velocity streams of data.

Short Bio

David Belanger is currently a Senior Research Fellow at Stevens Institute of Technology. In this role he continues his work in Big Data Technology, Applications, and Governance. He teaches and is a leader in the Business Intelligence & Analysis Masters Degree program, In addition, he is involved in consulting related to Big Data in areas such as Telecommunications Services, Health Care, Security, and Networking.

Prior to this role, Dr. Belanger was Chief Scientist of AT&T Labs, and Vice President of Information, Software, & Systems Research at AT&T Shannon Labs in Florham Park, NJ. The Information, Software & Systems Research Lab conducted research in: large scale and real time information mining related to operations of a (communications) service business; interactive, information visualization; scalable, dependable software systems; and new, information based, communications services. It was also responsible for delivery and operations of very large scale (e.g. petabyte), near real time service management capabilities to AT&T, and its customers, as well as a wide variety of

analytic and information mining services. He was the creator of the AT&T InfoLab, an organization aimed at optimizing the value gained from data for AT&T. InfoLab was a very early participant in “Big Data” research and practice. It performed data oriented projects across the spectrum of telecommunications services including: networking, mobility, operations, customer interactions, services, and fraud/security.

Accomplishments ranged from revolutionizing the corporate fraud systems and systems for measuring customer experience for each customer in the Mobility Business, to winning the Netflix Prize in 2009. They also included the development of world class tools used in Big Data. (<http://techchannel.att.com/play-video.cfm/2009/5/18/Tech-Icons:-Dave-Belanger>)

Dave joined Bell Laboratories in 1979. He has led research in software systems and engineering, information mining, information visualization, and development in very large scale data systems. He built the Software Engineering Research Department which provided software tools and techniques used across AT&T Bell Labs, and via open source, across the world.

Prior to AT&T, Dave was associate professor of Mathematics and Computer Science at University of South Alabama, co-founder of Gulf Coast Data Systems (a computing services company), and a consultant for a number of organizations. He received his B. S. from Union College (NY) in Mathematics, and an M. S. & Ph.D., in Mathematics, from Case Western Reserve University.

In 1998, Dave was awarded the AT&T Science and Technology Medal for contributions in very large scale information mining technology.

In 2006, he was named an AT&T Fellow for “lifetime contributions in software, software tools, and information mining”.

IEEE Communications Society Industrial Innovator Award – 2009
Association of Computing Machinery (ACM). Distinguished Engineer
Institute of Electrical and Electronic Engineers (IEEE), Senior Member.

TechAmerica (nee Information Technology Association of America):

- Member of Board of Directors 2004 – 2012
- Chair of Commercial Policy Board & Member of Executive Board 2011 – 2012
- Chair Workforce and Innovation Committee 2010-2012

REAL (Recommendations for Education and Advancement of Learning) Commission Co-Chair 2012

21 Patents Awarded, 20+ in progress.