

Swamy Laxminarayan
A Perspective on the Technical and Human Driving Forces behind the Creation of TITB

I was asked to write a special piece for this Journal honoring its founder Swamy Laxminarayan. It is my intention therefore to describe what drove Swamy to the creation of the Transactions on Information Technology in Biomedicine (TITB) and what was “the thinking” behind. Generally speaking of course I suspect that in life the description of any event by a group of individuals will probably generate different versions that have a direct relation to the number of individuals involved and who those individuals are. In other words, each individual has a very different interpretation of the same event. Some of you which interacted with Swamy through the years will probably have pieces to add to this story which in turn would make this life puzzle a more accurate one. These are my views:

I believe that the qualities that Swamy had acted particularly as a catalyst and an enabler for the founding and success of TITB. Swamy was a good strategic thinker. He had the ability to look at things both from an operational as well as strategic point of view. For example, every project that I have been associated with him, started with a number of individuals and as time passed, he would incorporate new pieces that would enrich the final product. If you look at the original issue (March 1997) of the TITB and compare it to a subsequent issue you will notice that three new members had been recruited to the Editorial Board. One of those was Ted Shortliffe who together with Sherilynne Fuller were the only two individuals that were part of the President’s (US) Information Technology Advisory Committee (PITAC) and had a “biomedical informatics” background. In March 2000, four new Editorial Board members were introduced. One of them, Ilias Iakovidis is a representative of the European Commission. Swamy was not only inclusive of both national (US) and international individuals but the inclusion of academia, industry and government was and is very key to connecting individual ideas to a group consensus and to required policy and appropriate funding mechanisms. None of these areas can be excluded, and Swamy knew that very well.

In the late 70s when the EMBS started, the group was pretty focused and not too big. Several of us became “subject chairs” during our conferences and as we moved into the eighties there were three members of EMBS that were mainly involved in the “information” side of things. Swamy, Nitish Thakor and myself. Each of us was addressing different application areas at the beginning, however it soon became clear that a common infrastructure was going to be needed and biomedical engineers would have to work very close with computer scientists, telecommunications experts and others in order to succeed. The days of working only with physicians, nurses, and hospital technicians only were over. This was also the period of time that Swamy came to live to the US.

In 1986 Swamy started to attend the SCAMC meetings (now organized by the American Medical Informatics Association). He became interested in this arena because of his liking for Computational Biology and even Genetics. During this period I recall in particular Swamy’s interest in a number of events that I was involved in:

- A session I chaired for the Boston EMBS annual meeting (87) on expert systems / AI and decision support,
- Later between meetings at IBM and in the Orlando EMBS conference organized by Joachim Nagel, I organized some special sessions and symposia on medical imaging bringing colleagues like Ralph Bernstein from the IBM Palo Alto Scientific Center, who managed our team that developed the first telemedicine (Medical Imaging Display Station / MIDS), Richard Robb from Mayo, which showed his work with Analyze, i.e. volume rendering of MRI images and Mike Ackerman from the National Library of Medicine, who spoke of the Visible Human Project, etc.
- The next was on the San Diego meeting organized by Andy Szeto and Raj Rangayyan. At the time Yadin David was chairing the IEEE Health Care Engineering Policy Committee (HCEPC) and I headed the WG on the Electronic Medical Record (EMR) and High Performance Computers

and Communications (HPCC). I had a special session that went on the issue of the role of technology in decreasing costs and improving medical effectiveness. Some of the colleagues in this session included: Warren Grundfest, Joe Bronzino, Peter Katona, Dov Jaron and many others.

- The US Government program on HPCC applied to Health Care, which was started by Don Lindberg at (NLM/NIH). While Mike Ackerman was one of the NIH representatives to this program and the Joint Working Group on Telemedicine I represented the Agency for Health Care Policy and Research (AHCPR) also in both Committees.
- A couple of years earlier we met Branco Celler and his colleagues doing home monitoring of elderly individuals. The strategy that I envisioned and was shared with Swamy was one of using the technology for homecare and treatment of the elderly with chronic diseases.

Swamy wrote several editorials on the TITB that pretty much established the direction he was seeking. The initial one with Jean Louis Coatrieux, Christian Roux, Stanley Finkelstein, Alan Sahakian and Susan Blanchard: “*Biomedical Information Technology: Medicine and Health Care in the Digital Future*” (March 1997), is a good example, but so were the Editorials – “*Healthcare Information Technology: What is on the Horizon*” (December 1997), “*Biomedicine in the 21st Century: Impact of Information Technology*” (March 1999), “*Emerging Trends at the Threshold of a Millennium*” (March 2000) and the paper he wrote with Robert Istepanian: “*Unwired E-MED: The Next Generation of Wireless and Internet Telemedicine Systems*” (September 2000). In some instances Swamy incorporated relevant pieces that others wrote to emphasize a particular point. Some examples of this can be found in the “*Foreword – Health Telematics: The European Prospects*” by Jean-Claude Healy from the European Commission and the Guest Editorial: “*Special Issue on Emerging Health Telematics Applications in Europe*” by Ilias Iakovidis, Constantinos Pattichis and Christos Schizas, (both in the September 1998 issue) and the editorial: “*Telecommunications and the Reform Process in Public Health*” (December 1997) that was based on the material I presented on behalf of the US Secretary of Health and Human Services in a meeting of Regional Health ministers in Mexico City.

After I moved in 1999 to the Centers for Disease Control and Prevention (CDC) I started to speak to Swamy of the value of Geographical Information Systems (GIS) particularly for epidemiology and surveillance purposes but also for computer modeling and simulation. In the March 2000 issue a new application area “*Public Health Information Systems*” was incorporated in the profile of the TITB.

As the EMBS annual meetings kept expanding and growing for many of us it became harder to focus in common areas of interest during these meetings. So Swamy created an annual meeting for those interested in all the areas covered by TITB. The meetings became the IEEE International Conference on Information Technology Applications in Biomedicine (ITAB). In September of 1997 we met in Prague, in May 1998 in Washington DC, in April of 1999 in Amsterdam, in July 2000 during the World Congress of Physics and BME in Chicago, in November of 2000 in Washington DC, and April 2003 in Birmingham. I believe that from a content point of view, there was a very good feeling among most of the participants of these events on what they were getting out of these meetings.

In reflecting now, it is clear to me that Swamy was a very dynamic individual that kept growing every day of his life until the end of it. In spite of the internal opposition and the struggles that he had to fight he stayed on course and he succeeded. While he incorporated those he met into this huge human network, he also incorporated the ideas that these individuals brought along. While orchestrating a masterpiece, he pushed forward his peers and co-workers to carefully deliver excellence.

Luis Kun

A friend, a colleague, a biomedical engineer, an information technologist