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## How to Find New Pathways to Support the Healthcare Workforce Based on The Clinical/Technical Tie



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In 1976, I became the first Vice President of Marketing for General Electric's CT programme. This was of major importance to Jack Welch, my group executive. I started by talking to many luminary doctors interested in GE's approach to CT. The unanswered question was, "how do doctors decide between the manufacturers?" After several weeks of integrating the customer responses, our team came up with "THE HIGH 5." This important list was successful because it was created through a close working relationship between customer and vendor, defined as The Clinical/Technical Tie:

1. Technical Leadership Features – e.g. speed of scanning
2. Image Quality Detail – e.g. spatial resolution, contrast resolution, signal/noise (clarity of the image).
3. Throughput – the number of patients scanned by a single machine in a day (a measure of profitability for the customer).
4. Life-cost – the number of patients required for breakeven in a day (a measure of profitability for the customer).
5. Total Service – reliability-driven "uptime," applications assistance, and marketing programmes provided to end-users to ensure they achieved optimum financial results.

The new pathway, driving the benefits of using the High 5, was the Clinical-Technical Tie. It required a very close working relationship between the clinicians and the scientists. The High 5 also provided a language for all partners worldwide – the concepts were simple to digest and significant in meaning. It was used by sales to present capability vs competition during the sales process. It was also used by marketing to present the necessity and ROI for new product development programmes to remain in a strong leadership position. The High 5 was one of a series of tools that established a highly effective management process. The key was global communication excellence.

In 1978, I became the Vice President for the Far East for General Electric Medical Systems. This was a strategic direction since Europe, the largest market outside the U.S., was dominated by Siemens and Philips. In the Far East, Siemens and Philips went direct, whereas the GE strategy was based on partners, with a focus on starting with distribution, moving to joint ventures, and then acquiring the partner if all pieces fell in place. This new pathway turned out to be a more effective approach since communication within any country is much better with native personnel.

The High 5 was readily accepted and tweaked by Yokogawa in Japan and Samsung in Korea. In China, in 1980, GE received the honour of providing the first whole-body CT Scanner in China at Beijing Hospital. GE eventually acquired Yokogawa/GE (YGE) and built a significant direct operation in China, with Samsung remaining a distributor in Korea.

The relationship for each organisation was guided by a vision statement consisting of a purpose (overall direction and goal) and mission (5 key strategies to achieve the purpose). Yokogawa became number one in the Japanese CT market and later a strong number two behind Toshiba. Beijing Hospital became the UCSF of China, making excellent use of the clinical/technical tie. Dr KC Lee, Chair of Radiology and I both served on the RSNA Radiology Outreach Foundation and remained very close friends.

In 1983, I was hired by Disonics MRI to position Disonics as a leader, as they already were in ultrasound. UCSF served as our luminary site, with Leon Kaufman, PhD of UCSF, serving as our Chief Technology Officer. This was a major new pathway based on splitting the market into universities (have long-term relationships with large imaging companies), hospitals (very conservative when venturing into a new technology), and the private market (made up of doctors with a business philosophy). Based on this market position, Disonics brought new methods of selling with a focus on the private market. Strong relationships were established with the private market (e.g. Texas Medical Equipment; Medical

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Imaging Centers of America; and Health Images.) Dasonics' sales team was trained in pay-per-study (a new game to medical imaging); trained in selling service and finance alternatives. Most of the competition required several visits to cover the three buying topics. The result was Dasonics being number two, with GE being number one for the initial years of MRI. The key was understanding where "the puck was going," as created by Wayne Gretzky.

In 1986, Toshiba requested that I join them as Senior VP for Medical Imaging in the U.S. I immediately started the process of acquiring the MRI Division of Dasonics. This was a strategic move to fulfill the goal I presented to Toshiba when discussing our relationship and goals. The vision statement for Toshiba Medical U.S. defined its purpose as having the responsibility to gain a leadership position in the United States to position Toshiba Medical Systems to become number one worldwide. The mission was to contribute to the betterment of the healthcare community with creative and value-oriented products – clinical efficacy, workflow and cost. The focus was on total customer satisfaction using innovative marketing strategies, achieving a reasonable profit for its customers and Toshiba, attracting, developing and motivating an outstanding team and complying with local, state and federal regulations. During a five-year period, TAMS grew from \$87M to \$400M. The key element was using the clinical/technical tie between Toshiba engineers from Japan and interventional radiologists from UCSF. The MRI Operation of Dasonics became part of TAMS.

In 1991, I established a consulting agreement with Toshiba, which provided time for expanding into the venture capital arena. It was an opportunity to expand the language of High 5 and the vision statement into a tool kit. The initial step was to teach a course at Stanford on "Tools for Strategic Thinking." This opportunity led to being on the Board of Directors of Stentor – focused on Enterprise PACS (Picture Archival & Communication Systems). I served a key role in having Stentor acquired by Philips. I then agreed to serve Stentor/Philips to integrate Stentor technology into all of Philips' medical businesses.

A start-up company exploring the idea of virtual reality visualisation, contacted Philips to discuss a relationship. Philips turned the individuals over to me to explore. That turned into my becoming the 1st CEO & Chairman of EchoPixel, Inc. The key to triggering the relationship is that I immediately recognised that the Founder, Sergio Aguirre, totally believed in the basics of The Clinical/Technical Tie. This led to "The Knowledge Model and Enabling Artificial Intelligence," published in Volume 22 – Issue 3 of Health Management.

What is the future? Consider a medical room with a diagnostic system on one side of the room and a surgical system on the other. Jim Thrall, then Chair of Radiology at Mass General in Boston, provided the idea to me while I was running Toshiba. A system was installed at Mass General. Since the optimum level of intuition is not always realised with 2D views, an additional component to the room would be an EchoPixel display. This could be followed by a digital pathology system, e.g. Histolix, developed at UC Davis. Additional technologies are being considered to optimise overall patient outcomes.

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