



TomoTherapy - New Facility Tour

Date/Time: Thursday, September 21, 2006, 12:00 PM - 1:00 PM
Tour Guide: Richard Schmidt
Location: Tomotherapy's New Facility (see map below), 1209 Deming Way, Madison, WI, 608.824.2800
Menu: An informal lunch get together will occur at Houlihans at 11:00 AM, 1262 John Q Hammons Dr, 608.827.0334
RSVP: by September 18th to Les Schroeder via e-mail (l.schroeder@ieee.org) or call 608.444.9144

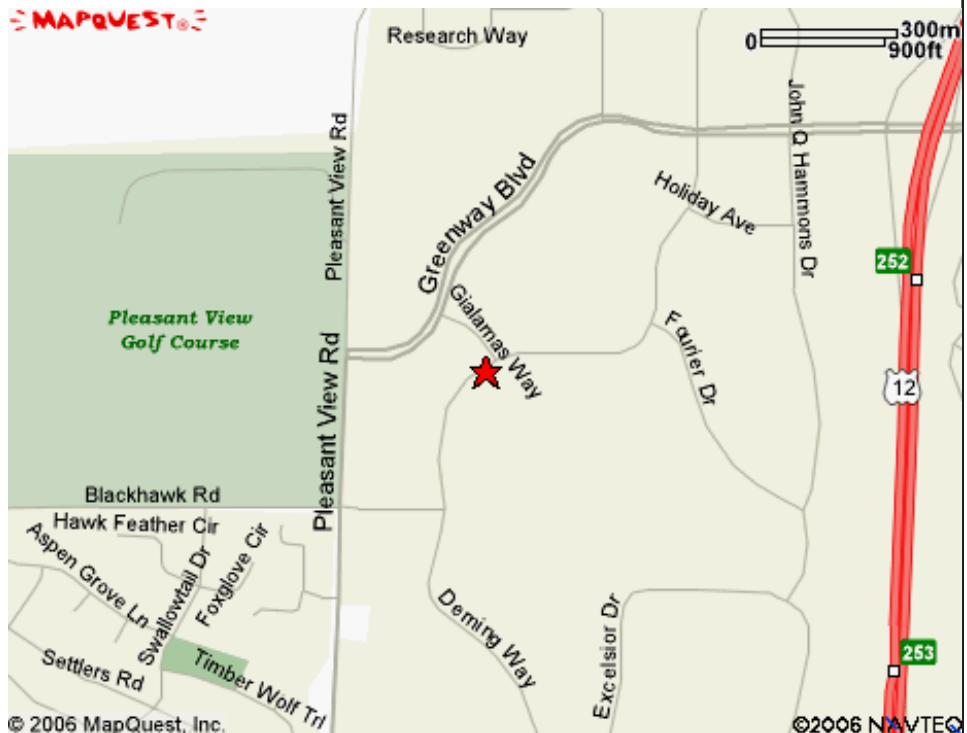
Non-member guests are always welcome!

Note that there will be a limit of 50 people on the tour. IEEE members and student members will be given preference. Please refrain from bringing any recording devices, including cameras and camera phones.

The TomoTherapy Hi-Art System® introduces the Tomo® Process, a new way to deliver radiation treatment for cancer. It delivers a very sophisticated form of IMRT, or intensity modulated radiotherapy, and integrates treatment planning, patient positioning, and treatment delivery in one system.

It is the most advanced radiation delivery system available:

- allows physicians to verify treatment volumes before each treatment, ensuring that patients are treated according to plan
- offers true 3-D MVCT image guidance before each treatment
- delivers outstanding helical tomotherapy to targets while minimizing damage to healthy tissue, providing optimal dose delivery for all patients opens new doors of treatment possibilities
- designed from the ground up - not handcuffed by historical system architecture
- Featured in Time magazine, The Wall Street Journal, and many local media outlets
- Winner of Frost & Sullivan's 2005 Radiotherapy Solutions Excellence in Technology Award



The TomoTherapy Hi-Art System® combines IMRT with a helical delivery pattern to deliver the radiation treatment. Photon radiation is produced by a linear accelerator, which travels in multiple circles around the gantry ring as the couch moves through the gantry. The linac moves in unison with a multileaf collimator, or MLC, which constantly modulates the radiation beam as it leaves the accelerator.

The IEEE is honored to have been invited to a tour of TomoTherapy's new facility. Please join us.



Upcoming 2006 Short Courses for Engineers and Other Technical Professionals

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For further information...

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Super-conducting Voltage Support - Meet the SuperVAR

- Date/Time:** Thursday, October 19, 2006, 11:45 AM - 1:00 PM
Speaker: Mike Ross, P.E., Principal T&D Planning Engineer, American Superconductor
Location: Rocky Rococo's Pizza, 7952 Tree Lane (Madison Beltline Hwy. at Mineral Pt. Rd.), 608.829.1444
Menu: Pizza buffet, salad and soft drinks (cost \$10.00, free for student members)
RSVP: by October 16th to Les Schroeder via e-mail (l.schroeder@ieee.org) or call 608.444.9144

Non-member guests are always welcome!

More information about this meeting will follow in next months newsletter and on the IEEE Madison Section website.

New Madison EMBS Chapter

The Madison IEEE Section now has a Chapter for the Engineering in Medicine and Biology Society (EMBS). With so many engineers in the Madison area working in biomedical fields, it's about time. The Chapter will invite speakers and discuss topics of interest to EMBS members. It will also provide a means for people in the very diverse areas of engineering in medicine and biology to learn about each other's work. Look for upcoming meeting announcements. Membership is open to all IEEE members and meetings are open to the public. For more information, or if you would like to speak on your area of specialization, please contact Seth Goodman, (608) 833-9933, sethg@GoodmanAssociates.com.

Call For Fellow Nominations

Forms and instructions for preparing nominations for IEEE Fellow grade membership are now available on the IEEE web site at www.ieee.org/fellows. Nominations may be prepared electronically or in hard copy form and must be submitted by March 1, 2007. The grade of Fellow recognizes unusual distinction in the profession and is conferred upon a person with an extraordinary record of accomplishments in any of the IEEE fields of interest. These accomplishments shall have contributed importantly to the advancement or application of engineering, science and technology, bringing the realization of significant value to society. To recognize the entire spectrum of engineering activity, candidates are classified as Application Engineer/Practitioner, Research Engineer/Scientist, Technical Leader, or Educator, and judged accordingly. At the time the nomination is submitted, the candidate must be a senior member who has completed five years of service in any grade of IEEE membership excluding affiliate membership. The nominee's dues must be current. Anyone may submit a nomination. However, all nominations must be supported by at least five, but no more than eight, references from active IEEE Fellow grade members familiar with the candidate's work. If the candidate is from Region 9, the IEEE Fellow Committee will accept references from senior members.

New Senior Members

Congratulations to the following IEEE Madison Section Members who became IEEE Senior Members in the last few months:

Leyuan Shi & Charles Brokish

What Early Electrical Engineers Can Teach Us About Usability

by Robert Colburn

Usability has gained a great deal of well-deserved attention in recent years, stimulated in large part by Web site design and usability. A number of large conferences are devoted to usability, books are written on the subject, and many companies hire consultants or have established entire departments to evaluate the usability of their designs. The first World Usability Day was celebrated on 3 November 2005, and presumably this will become an annual event, with 14 November 2006 scheduled to be the next.

"The purpose behind each thing determines its development" — Marcus Aurelius

Many of our early electrical pioneers seemed to have had an intuitive grasp of what we now call user-friendly design. The triumph of Morse's telegraph over competitors' models came about largely because of the usability of Morse code. Morse's competitors — and originally Morse himself — relied on numerical codes, which then had to be translated by means of a dictionary into letters and words. Not only was this cumbersome for the operator, it also meant time and expense on the part of the inventor.

Morse's assistant, Alfred Vail, thought it would make the telegraph much more efficient if the translation step could be dispensed with and the information transmitted by letter. Vail took the further user-

friendly step of assigning the simplest and shortest code combinations to the most frequently used letters. In a brilliant grasp of user-friendliness, he counted the slugs in the compositors' type cases at the office of a newspaper in Morristown, New Jersey, to determine which characters were used most frequently.

The telephone — one of the earliest electrical technologies intended to be used directly by the public (as opposed to the telegraph, where trained operators provided the interface between the customer and the technology) — is another example of how usability influenced design and acceptance.

The 1882 three-box telephone, the first telephone manufactured by Western Electric, freed one of the user's hands by mounting the transmitter into the unit so that only one hand was needed for holding the receiver to the ear. A writing shelf was incorporated in the design, in deference to the fact that conversing by telephone frequently means exchanging information which needs to be written down. As early as 1877, it was recognized that ease of use would be further served if the transmitter and receiver were together in a hand-held unit.

Two Englishmen, C. E. McAvoy and G. E. Pritchett, were awarded patents on such a handset, and Robert Brown obtained a U.S. patent for a combined handset the following year. However, in this case, it took some time for the technology to catch up with the convenience. The early handsets were vulnerable to acoustic feedback, as well as variations in performance if the user moved his or her head, causing the carbon granules to fall away from the electrodes. By 1919, these problems had been solved, and the combined handset was available.

Some other simple, but very important usability advances for telephone design were putting the numbers outside of the fingerwheel

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Don Sweeney & Roger Swanberg
leading a workshop

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register by Sept. 19th.**

dial instead of behind the holes so that the fingerwheel would not obscure them while rotating (1949), and including a subscriber-operated ringer-volume control. Allowing the subscriber to adjust the volume meant a huge savings for the Bell System in reducing the amount of service calls which technicians had to make.

Edison's lightbulb socket, with its spiral screw, is another example of intuitive usability. For two years after the invention of the practical incandescent lightbulb, the fragile bulbs were difficult to install and were easily knocked loose. In order to become widely accepted, something less frustrating for the customer needed to be invented. What the Edison company came up with, however, was less a new invention than an adaptation of one which was sanctioned by years of familiar use: the screw socket.

The explanation for the design is that Edison — or one of Edison's assistants who was standing near as Edison cleaned his hands with kerosene — got the idea from the screw cap of the kerosene can. Not only did the simplicity of Edison's base advance customer acceptance of Edison's light bulb over those of rivals, its ease of use generated a market for lamp socket connectors which would allow electrical appliances to be plugged into the Edison-type lamp sockets, rather than having to be permanently wired into the building's electricity supply.

The aforementioned are just three examples of the many world-changing innovations which have benefited from their developers' grasp of the importance of the "human effect."

Robert Colburn is research coordinator at the IEEE History Center at Rutgers University in New Brunswick, N.J. Visit the IEEE History Center's Web page at: www.ieee.org/organizations/history_center/



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New Senior Members
What Early Electrical Engineers Can Teach Us About Usability

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