Madison Section NEWSLETTER

Volume 5, Number 4 | *Serving IEEE Members of South Central Wisconsin* | April 2002

Mobile Radio - From 2 MHz to Cellular & Beyond

Date/Time: Tuesday, April 23, 2002, 7:00 PM - 9:00 PM
Speaker: Donn Dengel & Paul Moller, Motorola
Location: 1800 Engineering Hall - parking available in lot 17 next to Engineering (see map online)
Menu: pizza and soda - FREE!
RSVP: by April 19th to Tom Yager via email (tyager@biocentricsolutions.com) or call 608.821.0821 ext. 342

Non-member guests are always welcome!

Donn Dengel is a Senior Electrical Engineer in Motorola's Commercial, Government & Industrial Solutions Sector, where he designs electronic hardware for land mobile two-way radio products. Last year, his team shipped the world's first Bluetooth application for a two-way radio product. Prior to joining the sector last year, he had 18 years experience at Motorola's Automotive & Industrial Electronics Group designing and testing OEM automotive electronics products. His microprocessor-based memory seat and mirror module designs appeared in several Ford Motor Company products. His career interests are in electromagnetic compatibility, two-way radio, and microprocessors. Donn earned his BSEE degree in 1982 from the University of Wisconsin-Madison. He is an IEEE member.

Paul Moller has 20 years experience working for Motorola on Cellular Phones, with a BSEE from the University of Wisconsin. During the first half of his career at Motorola, Paul worked in several product groups developing mobile and portable cellular phones. Currently, he is a Principal Staff Engineer and an active member of the IEEE Scc34-Sc2 group that is developing the SAR measurement methodology for the IEEE. From 1992 to 2000, he was the technical leader of the PCS SAR labs in Libertyville and Harvard, and is currently working in the RF Systems Lab of PCS Research Labs in Harvard. Paul currently co-chairs the CTIA ERP Working Group.

Tour of Space Astronomy Lab (SAL) and Space Physics Department

Date/Time: Thursday, May 23, 2002, 5:30 PM dinner, 7:00 PM tour
Speaker: Jeffrey W. Percival (Senior Scientist, Space Astronomy Laboratory) & Dan McCammon (Professor, Physics)
Location: dinner - Luther's Blues, 1401 University Ave., tour - Space Astronomy Laboratory & Space Physics, Chamberlin Hall
Menu: to be determined
RSVP: by May 20th to Tom Yager via email (tyager@biocentricsolutions.com) or call 608.821.0821 ext. 342

Non-member guests are always welcome!

This month's meeting will consist of dinner at Luther's Blues (see their web site at <http://www.luthersblues.com/> for directions and parking information) followed by a tour of the Space Astronomy Laboratory and Space Physics Dept. After dinner, we will all walk from Luther's Blues to Chamberlin Hall for the tours.

The Space Astronomy Laboratory (SAL) is a unit of the Astronomy Department at the The University of Wisconsin. SAL designs and builds instruments for the Department of Astronomy. These instruments help the Astronomy Department's faculty to do research in both space-based and ground-based astronomy. Research in space is performed using rockets, bal-

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Printing and Mailing by: SprintPrint
2790 S. Fish Hatchery Rd.
Madison, WI 53711

Published 9 times per year (Jan. - May & Sep. - Dec.) by the Madison, Wisconsin Section of the Institute of Electrical and Electronic Engineers (IEEE), as a service to its members in south-central Wisconsin.

Mailed at Madison, Wisconsin as 3rd Class, Non-Profit postage. Permit No. 953.

Online at: **http://www.bugsoft.com/ieee/**

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loons, the Space Shuttle, and free-flying satellites. Ground-based research is performed primarily at the Astronomy Department's two research telescopes, the 3.5 meter WIYN telescope in Arizona and the 0.9 meter telescope at Pine Bluff Observatory in Wisconsin.

Jeffrey's principal research interests center on using computers, computer software, and new computer algorithms to perform astronomical research and advance the work of other astronomers at UW. Examples of his research in this area include the creation of high precision astrometric software to produce mean light curves from space-based pulsar photometry with sub-microsecond precision, the use of new wavelet compression theory to develop and test a viable method of transmitting astronomical images over inexpensive but slow data links while maintaining a very high effective bandwidth, and a new state-machine approach to the traditional problem of producing and reducing astronomical coordinates for the purposes of pointing a telescope.

Dan's main work is in X-ray astronomy, which he likes because of all the weird things that you see and because you can have fun building the X-ray detectors and flying them on “bottle rockets” (X-rays don't make it down through the atmosphere, so you have to get your experiment up above it somehow). Lots of undergrads have helped out with these projects, and more should! He also teaches in the Physics department, and likes sailing, volleyball, and bicycling. He was an undergraduate at Caltech, a grad student at the UW, and now has a daughter at West High.

Learning Outside of the Box

by Vern R. Johnson

Regardless of whether you are just beginning your engineering career or have been practicing for years, education must remain a consistent priority. For successful technical professionals, learning progresses in three distinct areas:

- Technical vitality
- Sphere of influence
- Intellectual maturity

TECHNICAL VITALITY — FROM GETTING KNOWLEDGE TO USING IT

Engineers typically initiate their journeys to technical vitality in college, if not before. But colleges focus on imparting *knowledge*. College students spend a lot of time solving carefully selected problems that focus on technical knowledge in a specified discipline. As working professionals, however, knowledge alone is not enough; real-world problem solving requires not only the ability to retain knowledge, but also to draw upon a wealth of knowledge and put it to use. *Intelligence* is the ability to use one's knowledge to solve real problems. In essence, successful technical professionals develop the faculties for intelligently using their knowledge.

Technical vitality also involves developing and maintaining flexibility. Because technologies change rapidly, engineering professionals must be able to move into new areas and adapt or bolster their knowledge banks easily and willingly. As careers progress

such flexibility becomes more challenging; it's the "old dog-new tricks" conundrum.

SPHERE OF INFLUENCE — FROM BEING LED TO LEADING

When most engineers begin their careers, they are probably happy to work — at least for a while — as "apprentices." In this role, they learn, practice and gain from more experienced mentors. They eventually become better recognized as individual contributors, and they may even begin to feel a sense of accomplishment. But successful technical professionals don't settle for that warm and fuzzy feeling; they expand their influence beyond *themselves* by seeking opportunities to demonstrate team leadership and influence the work of *others*.

INTELLECTUAL MATURITY — FROM STUDENT TO INDEPENDENT LEARNER

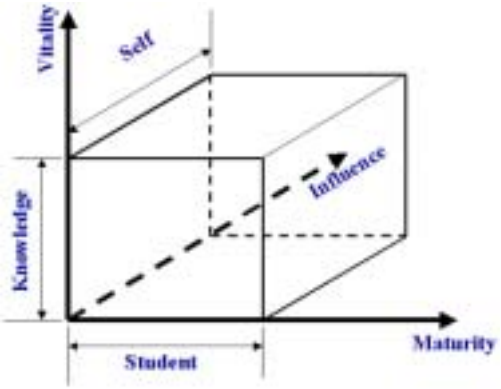
Learning takes place in three ways:

- Knowledge is presented to a student by an informed source (e.g., teacher, book, etc.)
- Knowledge is collected by an individual through personal observation or experience
- Knowledge is discovered through a process of reflective thinking — seeking meanings, discovering gaps in existing knowledge, and restructuring memory to match future retrieval needs better.

Many professionals are content with being *students*; it's comfortable and easy to learn from others. But being a student implies being bound to an educational system to meet learning needs. Intellectual maturity expects more than this boundary. Of course, successful professionals continue to learn as much as they can from others, but they also pursue learning in the latter two ways. They seek opportunities to try new things from which they can learn and they take time to pause and reflect on what they are learning.

Perhaps even more importantly, though, successful technical professionals take time to reflect on how their knowledge base relates to the projects they are working on. They aren't afraid to ask for help when they don't know the answers, but they first think the situation through and attempt to answer questions on their own. They become *independent learners* who take an inventory of their existing knowledge and weigh it against what they don't know to see how close they can get to awareness before seeking help.

When professionals progress from being merely students — whose learning is directed by others — to being self-directed independent learners, they will be able to commit to things based on their own judgment, rather than acting on the advice of others.



When the three measures of learning are plotted in a Cartesian coordinate system, a three-dimensional box results that is bounded by Vitality = Knowledge; Influence = Self; and Maturity = Student. Engineers need to develop in each area until they can easily function outside of this limiting mental box.

Vern R. Johnson is Associate Dean Of Engineering at the University of Arizona in Tucson, Ariz., and is IEEE-USA's Career Activities Editor. This article is adapted from materials in his book, Becoming a Technical Professional (Casas Adobes Publishing, Tucson, Ariz., 2000). For more information, go to http://www.dakotacom.net/~capublish.

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