Wisconsin engineer. Volume 112, Number 4 September 2008

Madison, Wisconsin: Wisconsin Engineering Journal Association, [s.d.]

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SEPTEMBER 2008 VOLUME 112, NUMBER 4

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RFID Technology on blood bags p.12

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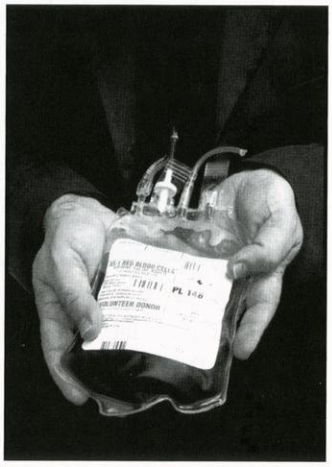

Cover photo by Anna Mielke

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Reflections on Career Connection

By Phil Mauermann

On a cold, snow-filled day back in mid-February, I was walking away from the US Mail Slot at Union South, when I realized the true significance of the letter I had just dropped off. That letter had my signature on it—it was a signed job offer. It was official. I had a start date. I was locked in.

I thought to myself: no more Friday's off? No more 11 a.m. start times? No more afternoons at the terrace or bacon night at Wando's? What have I done?

So I weighed my options. But I realized that my arm probably wouldn't fit in that mail slot, and I didn't think the building manager would fully understand the gravity of my situation. So I let it be. I was locked in… No more gameday tailgates? No more 5th Quarter? No more Grateful Red or Crease Creatures?

But how bad could it be? Is the world beyond UW-Madison really that much different?

Well, eight short months later and three months into my job as a gas distribution engineer, I'm happy to report that life is not so bad after all…just different. For example: no more 20-page lab reports, late nights at CAE, dinners at the ECB vending machines, or assignments due in lecture three days a week. In addition, returning to Madison as an alumnus still affords you many of the same privileges. Tailgates, the terrace, and "Jump Around" were just as exciting during my weekend visit for the Badger football win against Marshall.

Among all of the life changes since graduation in May, one of the most noticeable for me came the first week in September. For the first time in 18 years, I spent the week in my office, instead of the classroom. Another big change, I didn't spend a single night in Wisconsin Engineer office, working in front of a computer screen plastered with Adobe InDesign files. Instead, the magazine staff offered me the chance to write my very first editorial.

Instead of using this opportunity to reflect on my past five years at Madison, I think the best way for me to thank UW-Madison, the College of Engineering and Wisconsin Engineer for all of the wonderful memories is to pass along a few things that I've learned along the way. Seeing as this is the September issue and the magazine is stuffed full of recruitment ads from General Electric, J.F. Ahern, General Mills, and many, many more; it only seems fitting that I offer my advice to those of you heading to the Fall Engineering Career Connection.

So, am I even qualified to offer advice? Why should you trust me? Well, I've attended nearly every career fair dating back to the fall of 2003 (scary moment, I just realized how old I am), and, at one point in time, I was a student looking for an internship, co-op, or full-time employment. Last year at this time, I had my first interview for the company I now work for, Integrys Energy Group. However, experience alone certainly does not make me an expert—so instead, let's title this piece: Three secrets to career fair success.

1) Practice. The easiest way to develop a routine and get comfortable talking with recruiters is to practice. Not in the mirror—in person. You aren't trying to get a job with every company at the career fair, so use that to your advantage. Build confidence at the booths with the free flashlights and key chains first, and then shift to the big companies on your list. With only a few minutes to make your impression, better preparation often leads to better results.

2) Research. Anyone can Google search a company name. For example, you might not make the best impression with the question, "I read you're into machine design, what's that like?" Instead, consider searching the company website for the job posting you are interested in or that of a similar position. This allows for a more informed discussion with the recruiter and helps reduce those awkward pauses.

3) Listen. This is probably my favorite tip but also the most difficult. We often spend so much time rehearsing what to say that we forget to pay attention to the response. All of the noise and commotion in the ECB lobby makes this even more challenging. My solution, take notes. Not only does this helps convey your interest, but also allows you to record important information provided by the recruiter. In recent years, many companies will take your resume and then rattle off a list of instructions on how to apply on their website. While you don't want to lose all eye contact with the recruiter, having a notepad is a surefire way to stay focused though the chaos.

There you have it. Practice, research, listen. Not exactly "secrets," but hopefully some useful advice from someone who has bombed a time or two. Remember, Career Connection is just one the many ways to find a job, so don't get discouraged if you aren't successful on your first trip.

Finally, one quick plug for Engineering Career Services. The ECS Job Search Handbook is an amazing resource. From the start of your job search to drafting your acceptance letter, this guide is worth keeping with you. I brought this book with me everywhere, including my overnight trips for on-site interviews.

Good luck at the career fair, have a great semester, and go Badgers. WE

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The *Wisconsin Engineer* magazine, a charter member of the Engineering College Magazine Associated, is published by and for engineering students at UW-Madison. Philosophies and opinions expressed in this magazine do not necessarily reflect those of the College of Engineering and its management. All interested students have an equal opportunity to contribute to this publication.
Faculty Advisor: Steven Zwickel **Publisher:** American Printing Company, Madison, WI **Web address:** http://www.wisconsinengineer.com
Correspondence: *Wisconsin Engineer* Magazine; 1550 Engineering Drive; Madison, WI 53706 **Phone:** (608) 262-3494 **E-Mail:** wiscengr@cae.wisc.edu
The *Wisconsin Engineer* is published four times yearly in September, November, February and April by the Wisconsin Engineering Journal Association.
Subscription is $12 for one year.

Photo by Kari Jordan and Anna Mielke

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Daring to go one step further

By Amanda Wingren and Karl Chan

What if engineering could become a tool to improve the general standard of life in countries where their needs are financially out of reach? What if the engineering mindset could be applied to general problems in countries where basic technology is not readily available, clean water is inaccessible and wastewater fills the streets?

Engineers Without Borders-USA is an organization that takes on some of these questions. The group was founded in 2003 as an organization that aims to connect young engineers with the social and economic world around them through exposure to projects focused on clean water systems, renewable energy sources and improved sanitation systems. The Madison branch was formed in 2004 and has projects focused in South America and Africa.

El Salvador :

Kevin Orner is an engineering student who has found his place in Engineers Without Borders (EWB). Orner is project manager of the El Salvador branch—one of the divisions of the rapidly growing student organization. This past winter break, he traveled to El Salvador with a group of eleven EWB students and three faculty members, carrying with him a passion to make a difference.

The group had plans to link two communities, La Granja and Nuevo Ferrocarril, to a pre-existing wastewater treatment center via a gravity-based system. But upon arrival in El Salvador, the group found unexpected city ordinances in a village where the ground was unpredictably tough and the tools they planned to use could not get the job done.

The unanticipated setbacks tested the group of engineers and forced them to be resourceful. "Our motto for the trip was 'be flexible.' We had to change plans on the fly and continue construction after that," Orner says.

After assessing the situation and implementing a new design, they managed to procure a backhoe for excavation and successfully install 500 meters of pipe. The community pulled together and assisted in building five manholes and compacting an impressive 500 cubic meters of soil.

On these community workdays, 30 to 40 members of the community would come together to work with EWB and make the project their own. This interaction provided an opportunity for the engineers to form valuable connections with the people they were assisting.

Not only did they toil together, but the EWB volunteers also held educational meetings with several groups in the community. They taught the children about bacteria and the importance of washing hands through a demonstration involving glow lotion and black lights.

Aside from education regarding health and the importance of the wastewater system, the team also explained the maintenance and mechanics behind the system—vital information that will enable the community to maintain the system in the future.

Rwanda :

In the fall of 2005, Jonathan Lee, then a sophomore at UW-Madison, read an article in the *Wisconsin Engineer* about EWB's trip to Rwanda in July of 2005. Encouraged by the article, he attended an information session that semester. Afterward, he felt inspired to help those less fortunate using what he had learned as an engineer.

During his time in EWB, Lee has worked on the Rwanda project. Rwanda, a small country in east central Africa, is highly populated, with more than nine million residents. Due to the hilly terrain and lack of centralized water systems to carry clean water and sewage, obtaining drinking water is a major problem. As a result, villagers often must walk several miles for water—much of which is untreated.

After two years with EWB, Lee went on his first assessment trip to Rwanda in the summer of 2007 as the project manager. He was

Photo by Tom Moran

EWB hopes to globally expand by employing projects in the future across a variety of nations.

on unique projects in a small village called Muramba. All three projects—fuel board cutting, rainwater catchment and bio-sand filtering—targeted the water and fuel shortage problems in Muramba.

The bio-sand filtering plumbing system is designed to carry water through layers of rocks and sand so that the sediments can be filtered. One of the clever designs of this filter is the diffusion plate on top, which ultimately allows harmful biological substances to be digested or decomposed. As a result, the water that comes out from the plumbing system is nearly ready for consumption.

During their time in Muramba, the EWB group was deeply involved with the local people. In their assessment trip, they sat down and discussed with the community which projects they thought were most needed. "They bring in the construction techniques, and we have the designs and funding," Lee says.

One of their primary projects was the rainwater catchment. In this project, they worked side by side with a vocational school in the village. With the help from the locals, they built a gutter system which collects and leads water from rooftops to two small tanks. Once the small tanks are full, the overflowing water collects in a large tank, leaving the sediments at the bottom of the smaller tanks.

EWB projects answer the call for help, both financially and educationally, and make invaluable contributions. The team is able to apply the basic knowledge and skills related to engineering directly to a society. Although the designs are relatively simple, what the EWB team has done in projects can benefit communities significantly for years to come.

For those interested in joining EWB, the group looks for responsibility, passion and trustworthiness in their potential members. The group is one of the fastest- growing organizations on campus and is always looking for opportunities to expand. EWB is an opportunity to take an education of towering books and numerous equations and turn it into a hands-on experience far beyond predictable expectations. No matter what your skill level, engineering is a powerful tool, and EWB strives to make the most of it. WE

Photo by Tom Moran

Julia Wagner shows off a prototype for a stove for the Rwanda project.

Author bio: Amanda Wingren is a third-year student studying mechanical engineering. This is her second article with the magazine.

Karl Chan, from Hong Kong, is a freshman studying chemical engineering. This is his first semester writing for the magazine.

Professor Profile: Todd Allen

By Elizabeth Grace

Halfway through an engineering physics power lecture, a student in Professor Todd Allen's class blows a whistle. It's half time. Professor Allen of the department of engineering physics asks a trivia question unrelated to the lecture material and the first student to answer correctly earns an extra credit point towards their homework grade. Allen says of the halftime show, "If the topic were 'Life of the Instructor', the question might be 'What movie did I go to last night?'"

Professor Allen's enthusiasm in academia has recently led him to become the scientific director of the Advanced Test Reactor (ATR) National Science User Facility at the Idaho National Laboratory (INL). The facility has been designated as the Department of Energy's lead laboratory for nuclear engineering.

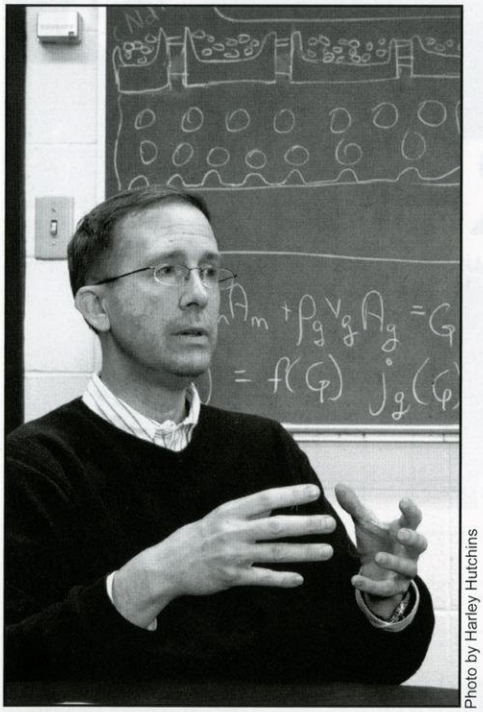

Photo by Harley Hutchins

Professor of engineering physics, Todd Allen, describes his new role as director of the Advanced Test Reactor National Science User Facility of the Idaho National Laboratory

When the INL initially advertised the scientific director position, Allen ignored it because he believed it was a full-time job and he did not have the desire to leave UW-Madison. Eventually people started to ask him why he had not applied for the position. He learned that the INL actually wanted the job to be given to an outsider, preferably a professor, and only as a part-time position. The position is also temporary, so after three years Allen's leadership role is up for renewal.

The lab wanted the scientific director to be an outsider to establish credibility in the university community. "They were actually trying to do stuff to engage the outside world rather than use it as an excuse to promote themselves and get the Department of Energy to buy them stuff," Allen says. In hiring a professor from a reputable university, they hope to work with universities and eventually attract students interested in their research.

Allen's research experience has prepared him for the new role. In the early 2000s, the Department of Energy wanted to develop long-term research goals – a 30-year time horizon for nuclear systems. Nine countries gathered together and worked on evaluating ideas, deciding on six likely major advances in the future. Allen was a coordinator of this summit, giving him program management experience that has also prepared him for his leading research position.

Allen's position as a former naval officer also made him a favorable candidate, since the ATR originally belonged to the Navy. "It was [the Navy's] test reactor. They were the only ones who had used it. As time has gone on they don't need the entire capability, so it was through their generosity that they have opened up certain spaces in the reactor for outside users like universities to be able to put their experiments in," Allen says.

Even with his time commitment in Idaho, Allen intends to remain devoted to his graduate students. "If I'm going to spend half my time working on their projects, it will make it more difficult for me to write grants, which is how we fund graduate students. So my other contention was if I take the job it can't be at the expense of the graduate students that are already here; so they agreed to give us a research grant," Allen says.

As the director of the facility, Allen will also be able to apply his experiments to the reactor, and he has many plans for other collaborative projects. Allen hopes to get the Idaho staff to visit universities to interact with people and develop new ideas. He also plans to encourage those looking to use the reactor to bring in other researchers, perhaps on an international level. "We'd not only like universities to pair with the national laboratories, but we'd like the universities to team with the industrial folks," Allen says.

When asked what he will get out of this commitment, Allen jokingly says, "Grey hair and frequent flyer miles." Through Allen's work with the ATR, however, UW-Madison will be the first university to help this facility grow. "The benefits of allowing us to interact with this facility ultimately will be worth it. As a student you want to get your degree, but you also want to be meeting people that will hire you later, so maybe this will help students meet those people earlier in their career than they might have otherwise."

Author bio: Elizabeth Grace is a senior studying english and technical communication.

Wisconsin Engineer Word Search

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E E A O D M I G I D C E E E E I

E L S A L V A D O R E A C T O R

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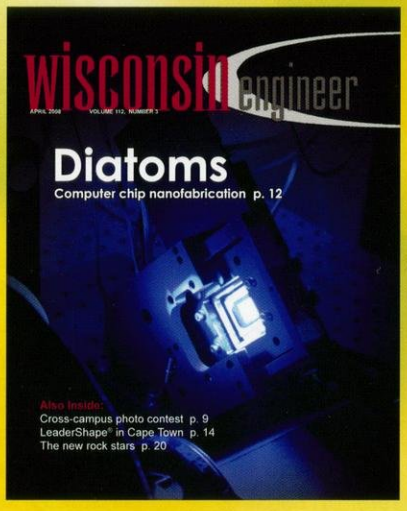

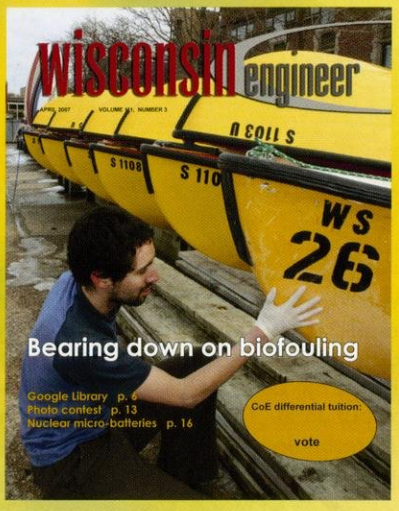

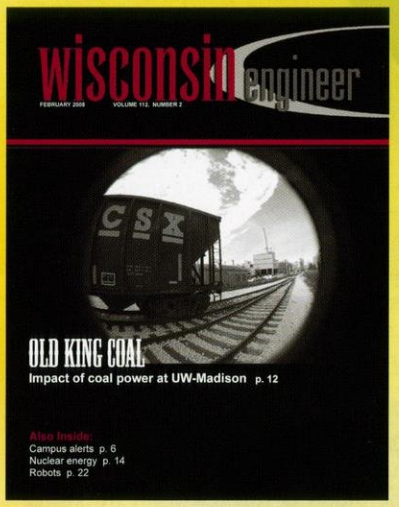

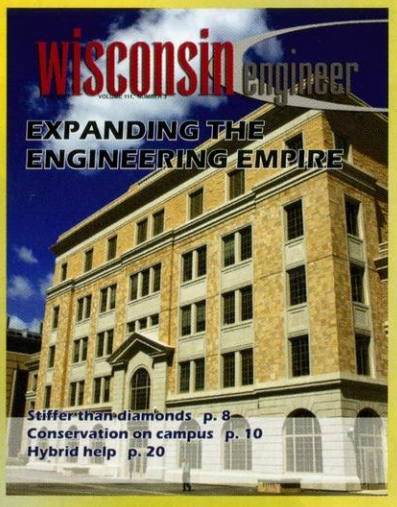

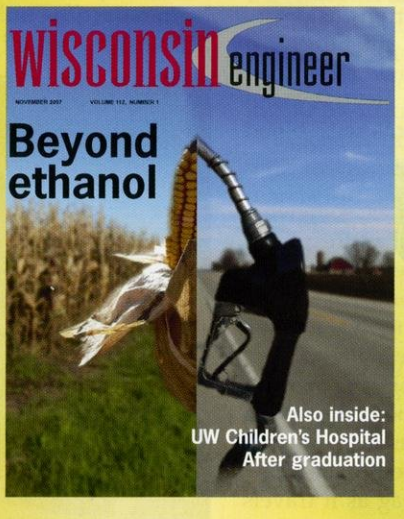

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Blood Donation:

How we can save more lives

By Lynn Singletary

Bucky's Big Ten Challenge is an annual event on the UW-Madison campus. The event was created to encourage blood donation in the winter, a time when the hospital blood supply is generally low. This past February, UW-Madison competed against seven other Big Ten universities to collect more than 1,200 units of blood—enough to potentially save 3,600 lives.

For donors, the process ends at the snack table, but the blood processing is far from over. The blood is tracked from the donation site to hospitals all over the world in order to ensure safety for transfusion recipients. Radio-Frequency Identification (RFID) is a technology being researched at UW-Madison to increase efficiency and alleviate some of the concerns with blood donation tracking.

The blood tracking system is somewhat similar to e-mail. If an e-mail address is off by even one symbol, the message will not reach the prescribed recipient. For simple messages between friends, this may not be a big deal; however, if an error in the address means not receiving a tuition statement or an important memo from a boss, the results could be much more problematic. Likewise, in blood donation, every aspect of the blood data must travel with the bag as it travels from donation, through processing and on to the hospital. And similar to an incorrect e-mail address, if one number or letter in the blood data is incorrect, the results create serious problems.

If the blood is not properly tracked, the complications with blood transfusions may not be fully realized until it is too late. In 2005, there were over 32,000 patients with adverse reactions to blood transfusion. The most common problems included fever or allergic reactions. Hemolytic reactions, which occur when the recipient's blood doesn't match the transfusion blood type and the recipient's immune system tries to fight off the new red blood cells, are very rare but fatal. The hope is that the new RFID technology will drastically reduce the number of adverse reactions.

The concept of the RFID technology is similar to radar, first utilized during World War II to discern enemy aircraft. It wasn't until a 1999 study of ultra high frequency waves (900 megahertz or greater) initiated at MIT that UW-Madison researchers in the E-Business Consortium began extensive work with the RFID technology.

The E-Business Consortium is a collaboration of more than 65 companies working with UW-Madison to break down barriers between business and academia while encouraging interdisciplinary research. (See *Wisconsin Engineer* April 2008 issue)

"We [at the E-Business Consortium] believe collaboration is a strategy to speed up adoption of new technologies," Alfonso

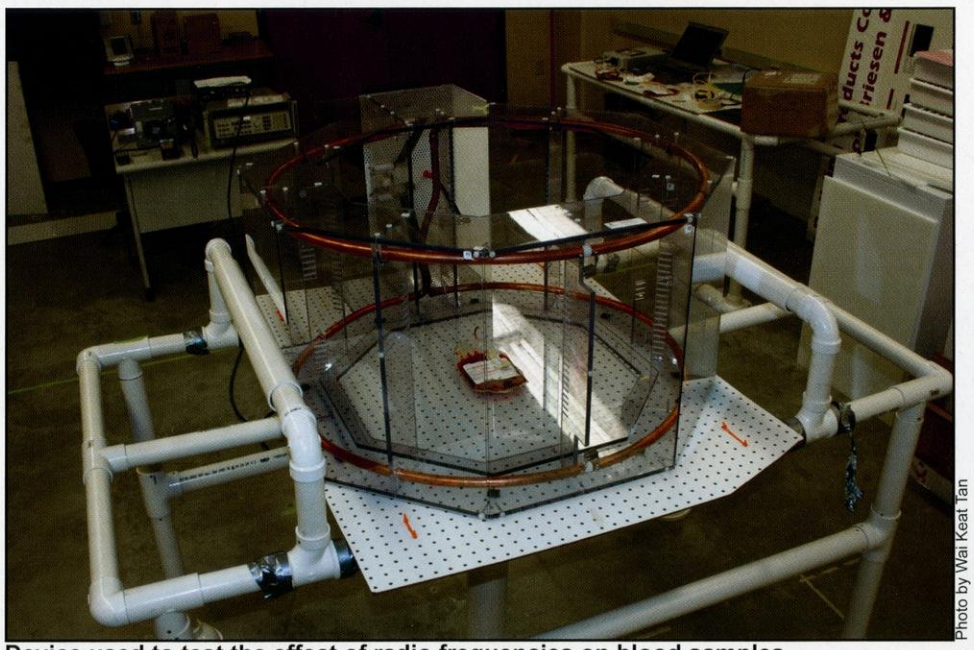


Photo by Wai Keat Tan

Device used to test the effect of radio frequencies on blood samples.

Photo by Wai Keat Tan

With RFID technology a 30 bag container of blood can be scanned in less than 30 seconds.

Gutierrez, head of RFID research at UW-Madison, says.

The current project using RFID technology on blood bags was started at UW-Madison in 2006. A microchip is attached to the blood donation bag, much like a system of bar-coded stickers, and is capable of carrying with it all essential health information. However, compared to the RFID technology, barcodes are inefficient and are much more likely to make mistakes.

"In one container there may be 30 bags of blood, each containing four barcode stickers that have to be scanned individually. It would take eight minutes to do one container, but with RFID we scan the whole container in less than 30 seconds," Gutierrez says.

The RFID team at UW-Madison is currently in the prototype stage of design and hopes to start the pilot program for this technology some time next year. Because RFID uses a low level of radiation in the scanning process, it must be approved by the FDA to ensure that the radiation will not negatively affect the blood.

RFID technology has the potential to increase safety of transfusions by reducing scanning mistakes and thus saving blood, as well as saving labor time in the scanning process; still, some are skeptical. Adding a personal ID to donor data is likely to create some concerns about privacy. With the proper policies in place to protect privacy, however, those concerns should be minimized.

"We're hoping to build a solution that might eventually become a standard for the industry."

-Pashmeen Ghia

The project is receiving funding from the Blood Centers of Wisconsin, Carter Blood Care and Mississippi Blood Services, and there are currently three participating hospitals as well as three blood centers cooperating to help finalize the processes for implementing the RFID technology.

"We're trying to design a whole solution that has enough flexibility to fit each of them as well as the possibility of other blood centers. We're hoping to build a solution that might eventually become a standard for the industry," Pashmeen Ghia, a graduate student in industrial engineering and an RFID team member, says.

The RFID team hopes to have a pilot product out by next year, and assuming all goes as planned, a full-scale distribution within the next two or three years. Once the RFID technology is approved, the possibilities for other applications are nearly endless. Other ideas in the medical field alone include using RFID to track IV pumps, respirators, wheelchairs, and even matching patients with the correct doctors. UW-Madison researchers hope that the RFID technology will replace the use of barcodes entirely, ushering in a new era of increased safety and efficiency for blood transfusions. WE

Author bio: Lynn Singletary is a sophomore majoring in civil and environmental engineering. This is her fourth article for the magazine.

Paving the way to better roads

By James Kadunc

Since the conception of the automobile, the US road system has evolved from an unreliable system of mainly dirt and stone byways into a massive, intricate network of freeways, boulevards, viaducts and turnpikes. Of paramount importance to these advances is the technological progress made in the composition and application of asphalt.

Photo by Helmi Hasan

Asphalt, a byproduct of the refining process, can have a variety of substrates to modify its properties.

In general, asphalt concrete consists of an aggregate bound together with a petroleum-based "asphalt binder." To create a roadway out of this material, layers are laid down at a temperature of approximately 150 C and compacted. The resultant material is relatively inexpensive, durable, quiet and quickly ready to support traffic.

While this process has been highly refined, it does not produce flawless roadways. Stress from traffic, freeze/thaw cycles and road salt produce cracks, ruts and, of course, potholes. Furthermore, petroleum refineries that produce asphalt do not spend much on asphalt research. In fact, asphalt is not particularly profitable for refineries to sell; it is simply a byproduct of the refining process.

The UW-Madison Modified Asphalt Research Center (MARC) is searching for ways to make asphalt cheaper, safer and more environmentally friendly. According to Codrin Daranga, associate researcher in the MARC lab, the possibilities for creating asphalt tailored to the specific needs of a certain project are endless. "The goal is to make the best of the cheapest, most environmentally-friendly materials".

Daranga says the key is considering every variable that goes into a particular paving project and formulating an asphalt to fit those conditions. Climate, type of roadway, road closure time and environmental impact all play a role in this decision. The most common asphalt modifications include adding polymers to the mix, modifying the temperature the asphalt is laid at or emulsifying the mixture to remove the need for heating altogether. As of now, there is no cookie-cutter answer to these design problems and no perfect asphalt mix.

Years ago, researchers developed the first method for assessing the properties of asphalt. It involved a small sample of asphalt and a person willing to chew on it. The MARC, on the other hand, employs cutting-edge technologies to evaluate an asphalt sample's properties. Researchers employ heat testing, artificial weathering, impact testing and any other means of abusing asphalt to quantitatively measure how much stress asphalt samples can withstand. Tests for flash point, viscosity and volatile organic compound content measure the ability of modified asphalts to be transported and laid easily and safely.

The overriding obstacle that often prevents the optimal asphalt from being laid on a roadway is cost. Like most large-scale processes, money is the biggest consideration in a design decision. Diverting traffic, shipping materials and labor costs are all expensive propositions. In many cases, engineers can modify asphalt formulas to minimize these costly issues.

Since asphalt is a product of oil refining, the price of asphalt all comes down to the price of crude oil. Given that material transportation, which also depends on the price of oil, is a large component in asphalt costs, the ability to extend the longevity of our roads will become an enormous issue as the price of oil continues to rise.

To aid in safe and effective cost reduction, researchers are looking to further the viability of so-called "warm mix asphalt concrete" (WMA). Heating standard, "hot mix" asphalt to the temperature needed to lay it requires enormous amounts of heat. Since asphalt contains volatile compounds, this process also releases noxious vapors which can be hazardous. Though WMA technology is fairly new -- having been introduced to the US in 2002 -- 30 to 50 C temperature drops have already been demonstrated, along with sizable reductions in volatile vapor and greenhouse gas emissions.

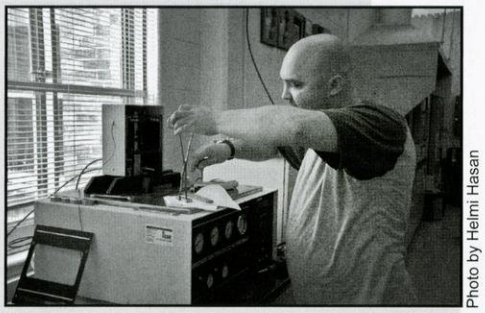


Photo by Helmi Hasan

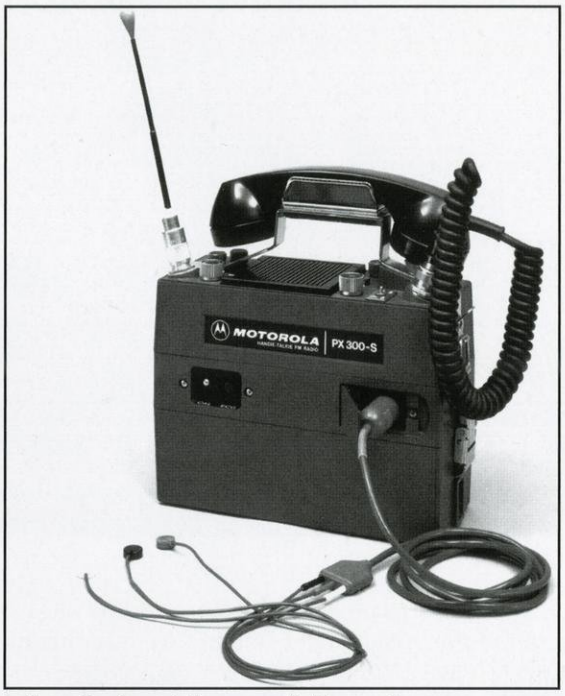
Codrin Daranga of the UW-Madison MARC tests the force needed to break an asphalt sample.

The MARC's advances in asphalt composition and testing are making a formidable impact on the asphalt industry. Many of the asphalt testing processes and equipment developed in the MARC lab see industrial use today, as do improved asphalt formulations. While a one-size-fits-all, pliable, durable, cheap, safe asphalt solution may be years away, innovations in asphalt design are making our roads better every day. WE

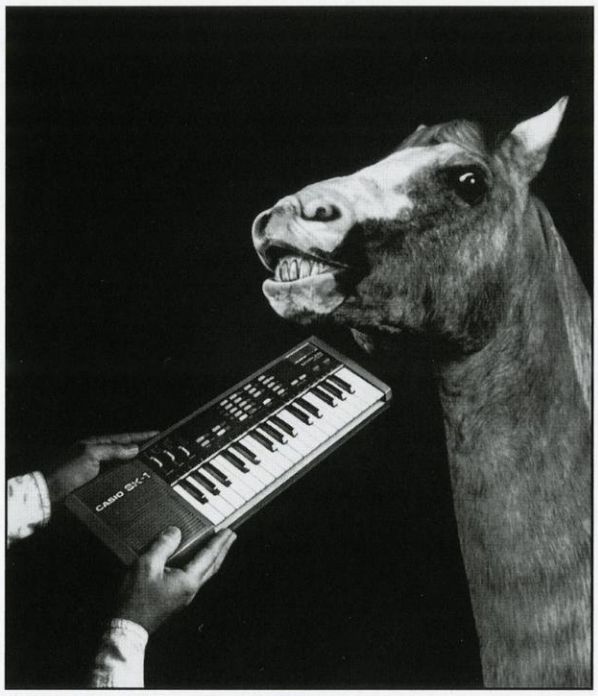
Author Bio: James Kadunc is a sophomore majoring in chemical engineering and economics.

Photo Archive

This edition is brought to you by the 1970's



The latest in mobile phone technology.



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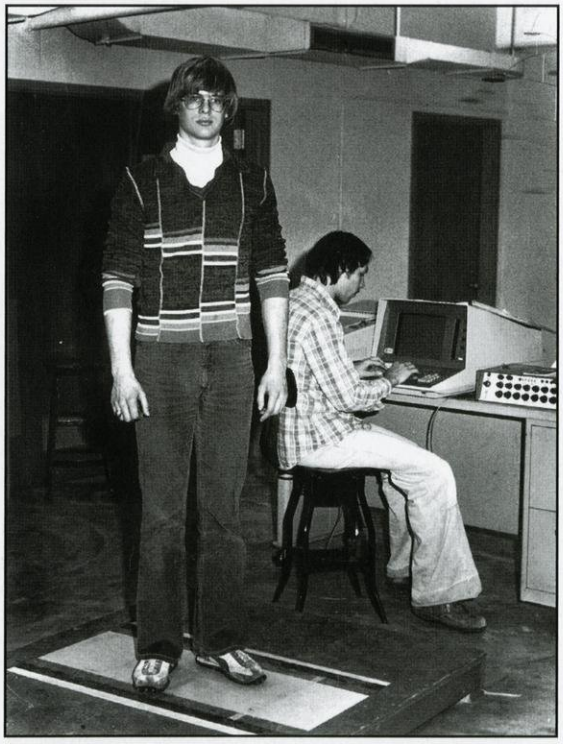
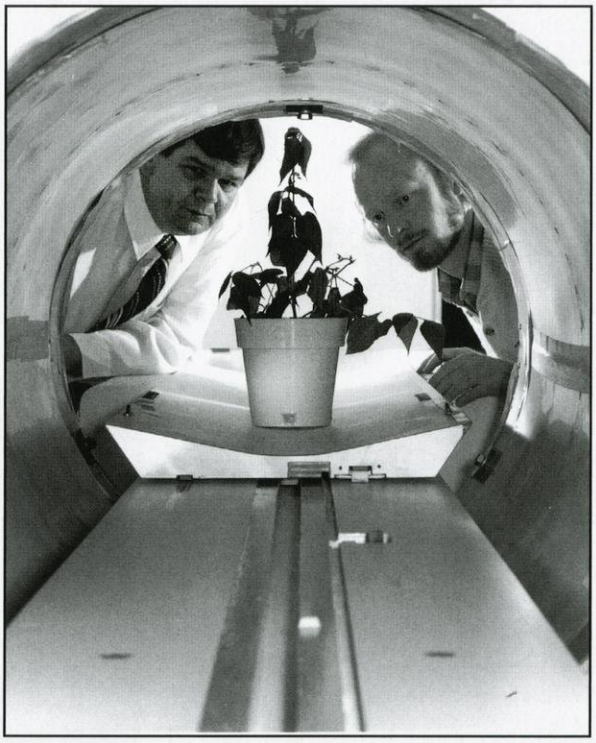


UW's early attempt at human teleportation.



Mystery of the house plant finally revealed with use of advanced MRI technology.

Runnin' Down A Dream

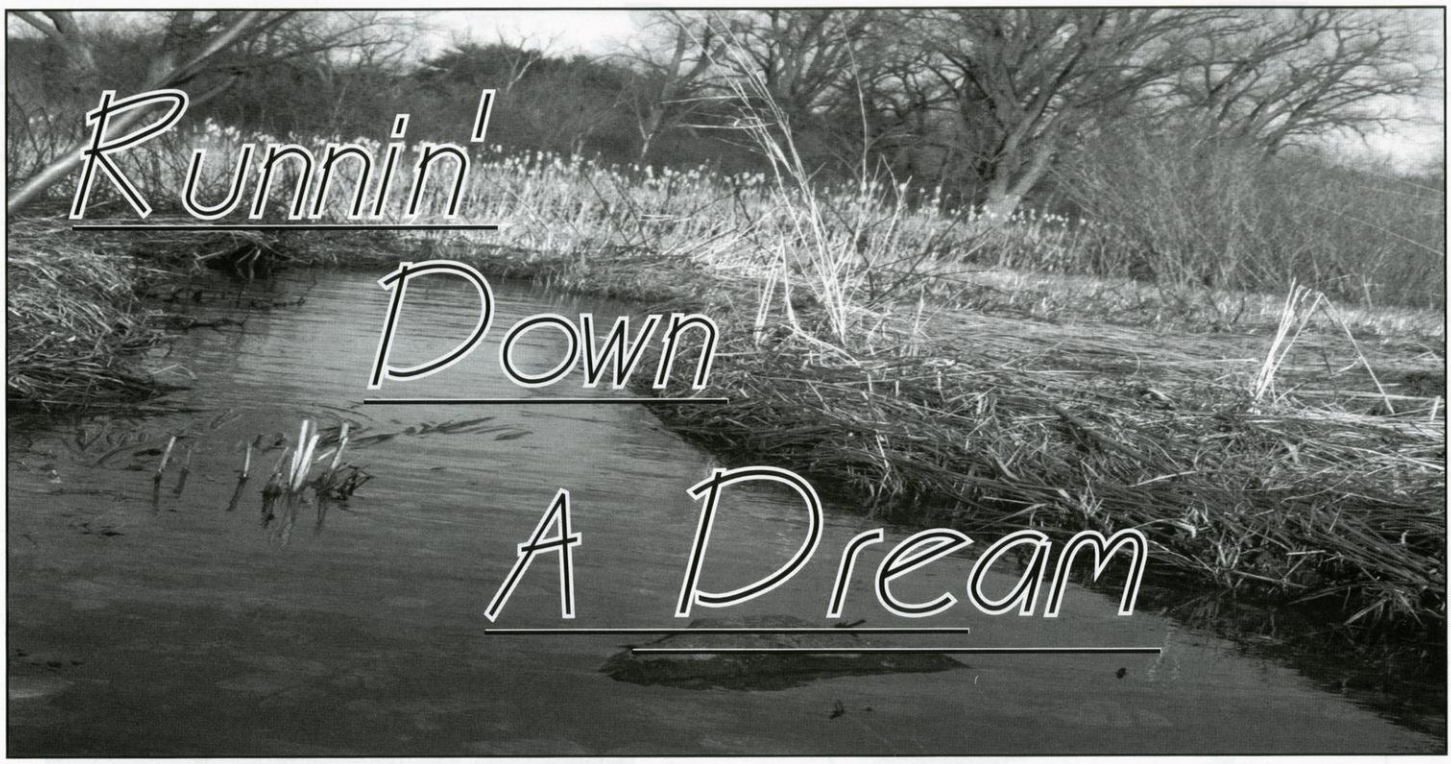


Photo by Preston Judkins

By Mike Sargent

As I turned off of North Wingra Drive onto Arboretum Drive, I paused for a quick breath of fresh air. Behind me was a myriad of quaint Madison homes; in front of me was a stone bridge that links the manufactured world of suburban expansion to a world of environmental beauty. Although it was cliché, I searched for Tom Petty's "Runnin' Down a Dream" on my iPod. My run through the Arboretum allowed me to experience some of Madison's finest wetlands firsthand. The next morning, in my fluid mechanics lecture, I was still pondering my existential run. I wanted to know more about the wetlands. My eccentric professor, Chin Wu, pointed me in the direction of his knowledgeable colleague, Ken Potter. Several hours later, amidst ambient jazz music, Professor Potter and I eagerly discussed Madison's wetlands.

A wetland is typically a low-lying portion of land that is saturated with water. During periods of excess rains or flooding, wetlands will become saturated and form temporary ponds. "Some wetlands become ponds because rainwater has filled them up. Even if you drain them into another system you will have flooding," Potter says. A recent ecological problem has stemmed from wetlands turning into permanent ponds.

Potter noted a common misperception regarding wetlands. While they do absorb excess waters, they are not a true filtering agent. "Water comes out of the wetlands pretty clean because it's falling out of the sky pretty clean…if you add nutrients from agriculture, that begins to dirty up the water," Potter says.

Most people acknowledge wetlands as a virtual dumping site for rainwater deposits such as winter road salt and sand, crop and plant pesticides, and excess sewage waters. Although I couldn't see it during my run, Mother Nature was hard at work absorbing mankind's messes. "It's one of those things in our society…we have to protect it, but no one's really clear why," Potter says.

The insatiable American desire for growth is pushing our population into every corner

Photo by Ross Tillman

The wetlands provide numerous services for people and wildlife, such as this whitetail deer.

of the country. Once "unattractive" land is now being dredged, excavated and developed into affordable property. With this expansion comes impermeable surfaces that water cannot directly penetrate. Despite our advancing society, we still have to manage rain and flood water. With more impermeable surfaces, water has less viable places to travel.

The way material deposits in the wetlands can greatly affect how wastewater is absorbed and filtered. "The most damaging to water quality in the Midwest are sediments and nutrients," Potter says. By continuously dumping sediments in the wetlands, we are promoting the germination of invasive plant species, which serve to choke out beneficial native plants. The best restorations are from people bringing back native vegetation," Potter says. Invasive species such as reed canary grass can disrupt fish habits, soil composition and water movement. "You have to keep storm and agricultural water out," Potter says of restoring wetlands with native wetlands vegetation.

Photo by Preston Judkins

As water moves around the plants, nutrients in the water are often absorbed by the roots and micro-orgnisms in the soil, serving as a remarkable filtration process.

Potter's current research with the Wisconsin Climate Change Initiative (WCCI) is promoting a positive change. Working directly with the Department of Natural Resources has allowed scientists to research state climate studies in real-time.

As Potter says, "The environment is under siege." Wetlands are crucial for maintaining our environment. Ecological imbalance and potential wetland flooding can be severely detrimental to our environment. The best hope for the future is continued wetland research and preservation. Programs such as WCCI are a small step in the right direction; with forward thinking professors such as Potter, UW-Madison is making strides toward increased wetland awareness. WE

Author bio: Mike is a junior majoring in civil engineering. This is his first semester with the magazine.

The Electronic Election

Photo by Wa'el Abdel Samad

By Carrie Boecher

It's Thursday night and I'm at the library. While my friends are at home, kicking off their weekends with "Grey's Anatomy" and "The Office," I'm stuck battling a mountain of assignments and regretting every minute that I wasted this week on Facebook, Instant Messenger and YouTube instead of studying.

Suddenly, my phone buzzes and glows blue. Text message! It's probably my friends, trying to convince me to give up the homework and come out with them. Or maybe it's my roommate asking if I'm interested in lunch tomorrow. I let the scenarios build up in my head, and when I've created enough suspense for myself, I flip the phone open.

My hopes drop. It's just from Barack Obama. "Watch Barack debate tonight on ABC!" it says.

While receiving a text from one of the most prolific figures in the country might seem like a momentous occasion, it's the third one I've gotten from Obama today. As part of the Obama Mobile campaign, I, along with thousands of other Americans, have been receiving texts reminding me of Obama's television appearances and debates for over a year. On the day of the Wisconsin primary, I received no fewer than five of these messages reminding me to go out and vote.

Obama isn't the only candidate who has utilized text messaging in his campaign; Hillary Clinton and John McCain have used similar systems of text messages and e-mails to keep supporters informed and active—and this is just the beginning. From social networking sites such as MySpace and Facebook to media sharing sites like YouTube, technology has played a bigger role in the 2008 presidential election than any before it.

"It's not even an option for candidates to not be represented online."

- Emily Hosek

With virtually unlimited access to information and conversation, it would seem as though this generation of voters should be the most informed. Although it may be uncertain whether vast online involvement will translate into real votes, students are optimistic.

"I think that Facebook has made everyone more aware of the candidates," Ted Messner, a UW-Madison sophomore, says. "And I think that the increased knowledge will lead to a significant increase in voter turnout."

UW-Madison sophomore Emily Hosek says, "I feel like one of the biggest excuses for people not voting in the past is that they didn't want to make an uninformed choice. But, with the internet, all of the information is so accessible all the time."

Learning about a candidate's position on an issue has never been easier. All of the major candidates have extensive websites laying out their platforms issue by issue. With the click of a mouse, computer users can see Hillary Clinton's plans for education, John McCain's goals for health care and Barack Obama's ambitions for foreign policy.

This easy access to candidate's policies helped Hosek, who is especially interested in the environment, make her voting decision for the Wisconsin primary.

"Before the primary, I just pulled up the Obama and Hillary websites and I compared their environmental policies side by side. It only took about 10 minutes total."

While these campaign websites have certainly made the political information more accessible, it's social sites like Facebook and MySpace that have really revolutionized the election process. In particular, they give candidates the opportunity to play up their personal images. On their Facebook profiles, for instance, candidates list their interests and religious views, as well as favorite books, movies, music and quotes. In addition to allowing viewers to observe similarities between themselves and the candidates, these profiles make the candidates more accessible and human. For instance, I found it interesting that Obama and I both list Bob Dylan among our favorite musical artists, and that John McCain and I both enjoy hiking in our spare time.

More than simply presenting candidate information, these sites act as a forum for users to discuss, debate and dissect the issues.

"Before the primary, I just pulled up the Obama and Hillary websites and I compared their environmental policies side by side. It only took about 10 minutes total."

- Emily Hosek

"The internet lets people from all over the world talk about the election with each other," Messner, a political science student, says. "There is more awareness than ever before because people are able to converse openly and see the different sides of each issue."

For instance, a quick glance at a MySpace politics forum reveals discussion threads ranging from "Why is the black vote traditionally Democratic?" to "Why Obama continues to distort McCain's military record." In these discussions, people from all races, ages, backgrounds and regions converse, allowing access to points of view that they might never have gotten otherwise.

Although people of all ages now use these social sites, the majority of users are part of the "youth vote," that is between 18 and 29 years old. According to the numbers on Facebook and Myspace, this group generally tends to vote more democratic In April 2008, Obama had over 750,000 supporters on Facebook—five times as many as Clinton and seven times as many as McCain. The MySpace numbers, while not as exaggerated, showed a similar trend.

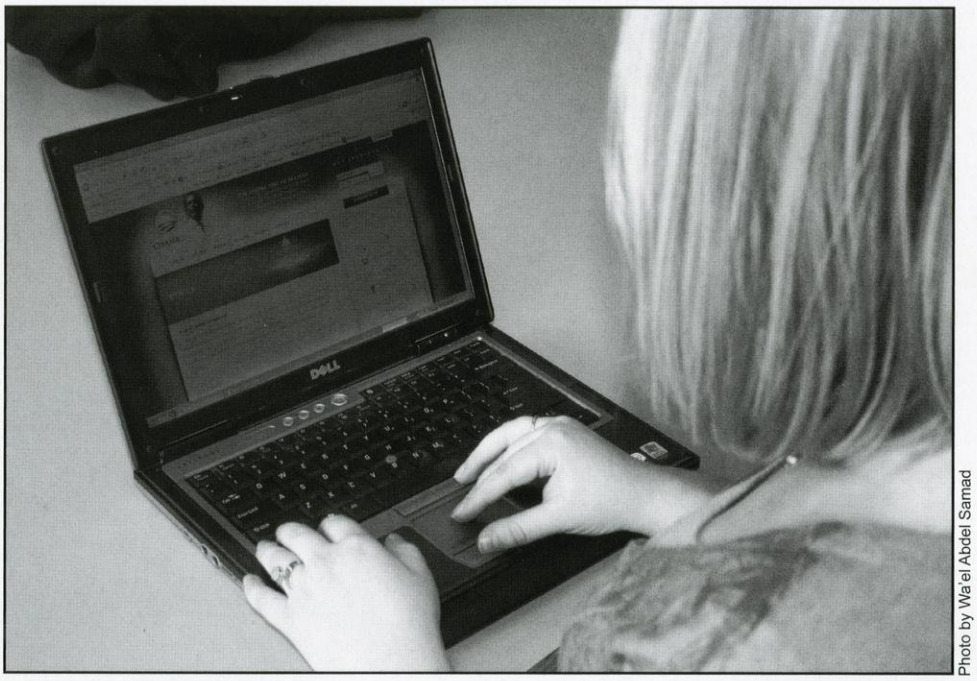


Photo by Wa'el Abdel Samad

The internet offers a highly accessible means of receiving campaign updates.

How these numbers will translate in the election remains a mystery; after all, the million or so people pledging their support for candidates on Facebook represent a mere sliver of the approximately 200 million eligible voters. There's no doubt, however, that candidates will continue to pour energy and funds into campaigning with technology.

"In this day and age, I think that the candidates can only benefit from taking advantage of our society's reliance on the internet," says Hosek. "At this point, it's not even an option for candidates to not be represented online."

Author bio: Carrie Boecher is a junior majoring in civil and environmental engineering.

Making instant messaging more....

Photo by Anika Lohrentz, and Frederik Sua

By Sally Green

While sitting at my computer trying to finish a difficult mass transport homework problem, I look through my instant messaging (IM) buddy list and find that my very cute and very single classmate is also online. I want to start a casual conversation with him but have to reread and edit my first message about five or six times to make sure that I don't sound too dorky, too stupid or too in love with him. After I feel comfortable with the initiating quote, I click "send."

I see that he is typing a message back! When he's done, a message pops up:

CuteGuy: Hey, what's up?

Now how do I respond? "I need help with hw." Delete. This implies that I only want to talk about answers with him.

"Oh, not much, just bored." Delete. This will make him think that I don't have a life.

FlusteredGirl: I'm pretty good. I am just trying to finish my hw before going out with friends. Can you help me with number 3? What are your plans for tonight?

I like this one; "send."

He is writing back.

CuteGuy: Just take the derivative of Equation 5.6 and then plug in the constants to get the value for Q. No, no plans for tonight. Would you and your friends mind if I tagged along?

I tell myself to not respond right away—make him wonder a little. This next message must sound completely amazing, nonchalant and charming.

FlusteredGirl: Sure, that works. I'll call you when we are ready to go.

That went pretty well since I was able to censor my thoughts. I don't know what I would have done if I was having a live conversation with him.

"You're typing a message, and then you sit there, it is really slow... It breaks up the rhythm."

-Professor Vanderheiden

By being able to write out an entire idea, reread it and edit it before sending, people are more confident that their best selves are put forward. Many are familiar with the current IM software. It seems as though every computer screen has the little box blinking at the bottom of the screen. New friends frequently will ask for an IM address instead of a phone number. Writing a conversation to someone is usually less intimidating than actually speaking on the phone. Entertaining or functional conversations may last for hours as new ideas are introduced throughout the day.

Millions of people worldwide are using IM. The age group using this software ranges from under 13 years of age to over 70. According to the Third Annual Instant Messaging Survey, 49 percent of people over the age of 55 use IM. Many teens and young adults are using IM to set up weekend activities, share photos, gossip, flirt and complete homework with friends. The majority of IM users who instant message while at work believe that it has had a positive impact on their work lives. Employees use IM to communicate quickly with colleagues, to get answers and make business decisions, to check in with friends and family, to interact with clients and customers and to exchange files. People say that IM helps them get more done during the business day, enabling them to leave the office earlier.

However, the current version of IM has

its drawbacks as it only allows block style chatting. This means that an entire message must be typed and then the "send" button has to be hit in order for the other person to see the message. This can be beneficial when speaking with an unfamiliar person, but can also be irritating for those who need their precious time.

"[Real-time Instant Messaging is] out; its public, and everyone can use it."

-Professor Vanderheiden

This issue is addressed by Gregg Vanderheiden, a professor in UW-Madison's college of engineering Trace Center, which addresses the communication needs of people who are nonspeaking and have severe disabilities. "You're typing a message, and then you sit there," Vanderheiden says. "It is really slow…. It breaks up the rhythm."

All IM users are familiar with having to type a message and then having to sit there, waiting, hoping for a reply. What if all of this waiting could be eliminated? What if two people in an IM conversation could see the partner's words being typed, letter for letter? Now that's instant messaging.

On January 15, 2008, AOL introduced the first version of real-time instant messaging as an added function. "It's out; it's public, and everyone can use it," Vanderheiden says.

This feature was initially designed by researchers at Gallaudet University and the Trace Center to serve the deaf and hard of hearing customers who are using IM as their primary source of communication. This new feature has the potential to also offer a natural-flowing conversational experience for all users.

Norman Williams of Gallaudet University developed the first prototype with a real-time text feature so that IM buddies are allowed to see each letter as it is being typed. Williams is deaf himself, which motivated him to push for creating a more instant IM program. The conversation will be smoother and faster, allowing for interruptions or questions in a logical order as in a telephone conversation. Someone who depends on IM as a primary source of communication should be able to receive the same benefits and intimacy as a telephone conversation, which has logical and ordered interruptions and comments. In search of a more personal relationship through IM, Williams changed the box that displays that a buddy is typing to show the actual letter being typed by the buddy. The need and desire for this feature was apparent by AOL's response when introduced to the new project. "[AOL] committed on the spot," Vanderheiden says.

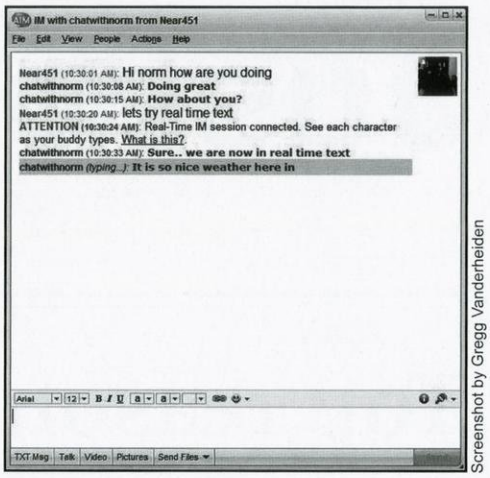
Several convenient possibilities are available with this new feature. Those workers who said that IM helped them finish work faster will be able to speak to colleagues with even more speed, potentially allowing for more productivity in the office. Researchers are working on another option to have IM set up with an emergency service. If someone online starts to type a message to "911" the conversation should automatically kick into real-time text so that the emergency helper can see as much of a message being typed as possible.

What about those who are poor at typing and do not want their buddy to see their mistakes? Not a problem. By a simple key combination, "ctrl-r," the real-time text function can be turned on or off. This convenience allows someone to type a long or important message, make sure they get it correct and then send it without anyone seeing the amount of effort put into it. Then, after a conversation has begun, the real-time text function may be easily turned on for a more fluent, intimate and time-effective experience.

A writer can also go out of real-time text to cut a paragraph from another document, paste it into the message box and then send it. Or the person can remain in real-time text mode and paste. "[Your buddy] will see it immediately as it is pasted in. Like a very fast typist," Vanderheiden says.

After understanding that the new real-time text option can be easily turned on and off, a number of UW-Madison college students were asked about their potential usage of the added feature. The results gave a 50-50 split. Half of the students said that they would sometimes use this option, while the other half said that they would never want to use it.

The fact that so many students would not want to use the real-time feature demonstrates the level of comfort of having a time barrier between the writer and receiver. Most people feel more confident knowing that they can spell check and review their words. The developers understand this. "Some people just don't ever want to use [real-time text]," Vanderheiden says. He relates this new feature to another current option that has become available with IM. "It's like video. Some people like video, others don't."



Screenshot by Gregg Vanderheiden

Screenshot of AOL Real-Time Instant Messaging in action.

Currently, AIM 6.8 has the new real-time text option out as a Beta until a final version is completed. "This is on its way towards being mainstream," Vanderheiden says.

Author bio: Sally is a senior in chemical and biological engineering who is involved with several student organizations.

IM Facts

- Predates the internet
- First appeared in the mid-1960's
- Used for notification of tasks like printing
- Early systems included CTS, Multics, SAVED
- Popular programs in use today: AIM, IBM Lotus, Sametime, ICQ, QQ, Windows Live Messenger, Jabber, eBuddy, Meebo, Paltalk, XFire, Scrapboy, Brigant
- Google, Yahoo, MSN, Excite, and Ubique all feature IM application

Just one more

The finest in eclectic humor

Top reasons why an engineer should not be president:

1. The Federal budget would be a giant differential equation
2. One of his/her advisors would be Matlab
3. The vice-president would be William Shatner
4. "Big Calculator" corporations would receive astronomical tax breaks
5. Air Force One would be replaced by a hovercraft
6. He/She would make steel bridge building a national sport
7. He/She would question the structural integrity of the white house and would have it demolished
8. Use PDCA for all decision making
9. Would spend half the budget trying to bring Albert Einstein back from the dead
10. All public speeches would be accompanied by a powerpoint
11. The state of the union would be given in binary and close captioned in Klingon

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