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IEEE Cleveland Contact

Publication of the Cleveland Section of the Institute of Electrical and Electronics Engineers.

Case Western Reserve University Student Branch IEEE Elections Results

by John Bennardo

The results of the April, 1999, elections for the student branch of the IEEE at CWRU are official. The new Chairman is Mike Suster; Vice Chairman, Jeff Shannon. Secretary is now Meredith Rodgers. Treasurer is Dan Morris.

Congratulations to our new officers, and many thanks to those of you who took the time to cast your ballot.

CLEVELAND SECTION AWARDS PRIZES AT NE OHIO SCIENCE AND ENGINEERING FAIR

by Richard Carlson

The Cleveland Section awarded prizes for three projects at the Northeastern Ohio Science and Engineering Fair held at Cleveland State University Tuesday, March 9, 1999. Upwards of 200 students competed in the annual event.

Winning the top prize of $150 for grades 11-12 was Eloisa Diaz-Insua of Shaker Heights for her project, "Methanol Concentration and Catalyst Effect on a Fuel Cell's Electromechanical Properties."

Ben McCann of Westlake won the $100 prize for grades 9-10 for his project on "The Relationship between Belt Speed and Van DeGraff Generator Voltage."

Grant Meachem of Shaker Heights received the third prize of $50 for grades 7-8 for his project, "Generating an Electric Current with a Magnetic Field, and Its Potential for Plasma Containment."

The Cleveland Section salutes these winners and all entrants in the Northeastern Ohio Science and Engineering Fair for their fine work.

CTSC Annual Benefit and Awards Banquet

To Be Held Tuesday, May 25, Executive Caterers at Landerhaven

by Richard Carlson

The Cleveland Technical Societies Council will hold its 53rd Annual Benefit and Awards Banquet on Tuesday, May 25, 1999, at Executive Caterers at Landerhaven, Mayfield Hts., Ohio.

More than 20,000 Cleveland area scientists, engineers, and other technology professionals are represented by the CTSC. The Council is actively involved in a wide variety of educational and scholarship programs that encourage students to become more involved in science and mathematics. Many of these students will become Northeast Ohio's technology entrepreneurs and leaders of tomorrow.

STERIS Corporation is the host for this year's event. Chairman is Bill R. Sanford, CEO of STERIS. Dr. Jeanette Grasselli-Brown, one of our region's most prestigious and active science and technology practitioners and advocates, will be the keynote speaker. Dr. Grasselli-Brown is a great role model for our young people and an inspiration to all of us who have devoted our careers to the advancement of science and technology.

Top science and mathematics students and their teachers from more than 100 schools in Northeast Ohio will participate in an afternoon career seminar prior to the banquet. The outstanding achievements of students and professionals will be recognized during the Awards Banquet.

Cost of this event is $50.00 per person. Sponsor tables of 10 are available for $500.00. Dress is informal. Call in your reservations to CTSC at (216) 687-1166.

What: CTSC Annual Benefit/Awards Banquet

When: Tues., May 25
5:30 p.m. Social Hour
6:30 p.m. Dinner and Program

Where: Executive Caterers at Landerhaven
6111 Landerhaven Drive
Mayfield Heights, Ohio

Cost: $50.00 per person

Landerhaven Drive runs east off Lander Rd. just north of Cedar Rd.

IEEE Cleveland Section CHAIR'S COLUMN

by Stephen Phillips

As summer arrives, the IEEE Cleveland Section begins its summer break with the next newsletter scheduled for electronic distribution in September. This is a good time for members to consider upgrading their membership status. For the majority of our members, this means that an upgrade to Senior Member may be in order. Elevation requires ten years of professional practice (credit of three years for a B.S. degree and an additional 1 year each for a Masters degree or Ph.D.), including five years of significant performance (such as patents, publications, leadership or teaching/mentoring). I have personally served on the evaluation committee for senior membership, and I am certain that many of our members are eligible for senior membership right now. Please have a look at the web page under membership at www.ieee.org. While you are there, please also update your e-mail address and apply for an ieee e-mail alias which will provide you with a stable e-mail address which you can keep for life. Many of our Section officers are senior members and would be delighted to serve as the required references for members eligible for elevation.

The Cleveland Engineering Society (CES) is embarking on a program of building professional society affiliates and has approached the IEEE Cleveland Section about becoming an affiliate member. In return for a modest fee from the Section, our members would be eligible to participate in several discount programs (similar to those offered by the national IEEE organization). Of more potential interest to our members are the services of their professional staff in providing a coordinating role for events sponsored by any of the affiliated societies. The executive committee needs your input to help determine if this would be of value to our members. Check out their web site at www.cesnet.org.

The CWRU student branch is moving forward with its plans for an SPAC (student professional awareness conference) for September 29th. John Bennardo (jeb4@po.cwru.edu) is serving as SPAC co-chair. The student branch has worked closely with the Cleveland Section (in particular with Bill Schultz) to set up financial arrangements consistent with the policies of the University and the IEEE. Bill Schultz has also agreed to serve as the Cleveland Section Webmaster on an interim basis.

Finally, since my last plea was successful in generating some interest in helping to run the Section, I will repeat it. It is encouraging that more of you are taking an interest in the operation of the Cleveland Section. The members of the executive committee and the technical society chapter chairs would appreciate even more participation so that we can ensure that we are taking the appropriate steps to best serve our members. Please contact anyone listed on the last page of the newsletter, or visit our newly updated web page at www.ewh.ieee.org/r2/cleveland for more information.

Until our next "Contact" in September, I remain your Chair, Stephen M. Phillips, Associate Professor, Department of Electrical Engineering and Computer Science Director, Center for Automation and Intelligent Systems, Case Western Reserve University. Please feel free to reach me at any time via my e-mail: smp2@po.cwru.edu. Have a good summer, everyone.

Cleveland Engineering Society May Events

5 "The Engineer as a Leader," featuring Anita Alexander, H & A International, Inc. 8:00 a.m.-1:30 p.m. , Construction Employers Association. $50.00 CES members, $60.00 affiliate members, $70.00 non-members. *Price includes program and lunch.*

12 "Breakthrough Results: Changing the Rules of the Game," featuring companies' innovative products and marketing techniques. Success stories from Hardcore Composites, 3M, Nottingham-Spirk and RoviSys will be highlighted, plus a panel discussion with representatives from Goodyear, Plexar, Machine Design Magazine and Creative Stages. All-day conference, Ohio Aerospace Institute. $125.00 CES members, $150.00 affiliate members, $175.00 non-members.

21 Energy Division Breakfast and Golf Outing at Sleepy Hollow. Breakfast only price: $20.00 CES members, $25.00 affiliate members, $30.00 non-members. Breakfast and golf price: $70.00 CES members, $75.00 affiliate members, $80.00 non-members.

25 "Infrastructure in the Information Age ." Keynote speaker: ODOT director plus presentations by BUGC, Cuyahoga County Engineers Dept., Division of Water, Sewer District, Norfolk Southern and RTA. 7:30 a.m.-2:00 p.m. ,Wellington's, Highland Heights. $75.00 CES members, $85.00 affiliate members, $95.00 non-members.

TBA "Benchmarking for Northeast Ohio Hospital Operation ," featuring Tom Kinman, Children's Hospital in Cincinnati, and Robert Turk, Siemens Building Technologies. Engineers/Facility Managers. 7:30 -10:30 a.m. More information to follow.

Contact Cleveland Engineering Society, (216) 361-3100, or visit www.cesnet.org for information and registration.

Playmate's Fair Use is Fair Play

by Michael Garvey

Terri Welles was "Playboy Magazine's" Playmate of the Year in 1981. In 1997, she established a web site. Apparently, Ms. Welles has aged gracefully. On her web site, she promoted herself as the 1981 Playmate of the Year. She included the words "playmate" and "playboy" among others, in metatags (hidden key word search terms) in her site.

PLAYBOY and PLAYMATE are trademarks of Playboy Enterprises, Inc. Normally, unauthorized use of another's trademark to promote products or services is an infringement of the trademark rights.

Playboy Enterprises was displeased with Welles' use of its marks and sued for infringement. Playboy argued that her use of the marks would cause customers searching for Playboy's web sites to encounter her site. Customers would be confused about whether her site is affiliated with, endorsed or sponsored by Playboy. Playboy also argues that her use of the marks would dilute or lessen the marks' distinctiveness.

The court, however, determined that this was a "fair use" of the trademarks. Fair use is a type of use that does not infringe trademark rights because it does not create a likelihood of confusion. The Lanham Act, which defines federal trademark rights, states that another entity's mark can be used "otherwise than as a mark...fairly and in good faith only to describe the goods or services" of the user.

The court determined that Welles was merely using the Playboy trademarks to describe herself. This is a permissible fair use.

Of course, whether a use of someone else's trademark is descriptive or causes confusion depends on your point of view. Witness the SWEETARTS® trademark for candy.

Sometimes "fair use" entails descriptive uses of elements of another entity's trademark. "Our RAINBOW® fruit drink has a sweet-tart taste." This is a use of the words "sweet" and "tart" to describe the way the fruit drink tastes, and does not involve use of the trademark.

Other times "fair use" entails use of the mark to refer to the mark owner's product, but merely in a way that describes the user's product. "Our RAINBOW® fruit drink tastes like SWEETARTS® candy." Sunmark, Inc., the maker of SWEETARTS® candy, might disagree, but this appears to be merely a description of the flavor, not a suggestion of sponsorship or affiliation that would cause confusion.

Comparative advertising is permissible. "Our RAINBOW® candy is better than SWEETARTS® candy." Subjective statements are usually allowable because they cannot be disproved. Objective statements are allowable only if they're true.

Fair use is not unlimited, however. Even if there is no confusion, some uses will cause "dilution" of the mark. The Federal Dilution Act (and many state laws) permits fair use but does not permit a use that tarnishes or lessens the distinctiveness of the mark. "Our RAINBOW® candy doesn't make you sick, but SWEETARTS® do" would not be acceptable.

Finally, use as a trademark (not as a descriptive term) might create a likelihood of confusion and dilution. "Try our SWEETART® fruit drink." This would probably create a likelihood of confusion because fruit drinks and candy are similar enough that use of the same trademark would suggest that they come from the same company. This would probably be dilution, too, because SWEETARTS® is a famous trademark that would lose distinctiveness if others were permitted to use it as a trademark.

The standards for fair use are simple to state but difficult to apply. Given the importance of free speech in this country, even commercial speech, great latitude is permitted for statements that are not false or misleading.

Michael Garvey is a patent attorney with Pearne, Gordon, McCoy & Granger LLP.

The Y2K Monster

(and Other Scary Tales of Bad Software)

by Steve Belovich

The past few months have witnessed an amazing number of articles, reports, seminars and news stories about the "Y2K Problem". " Newsweek," "Time" and other popular news magazines have already had cover stories on this topic and have devoted many pages to related stories as well. Local and national newspapers have run front page articles and The Wall Street Journal routinely reports on the Y2K readiness of major corporations.

A common thread that runs through these articles is the "human side" of the story. Millennial disaster predictions, survivalist bivouacs and religious conversions have been given an abundance of attention. Stories have even appeared which purport to show the best way to survive the coming crisis: which generators are best, how to prepare and preserve foods, first aid tips and even which 9mm handgun to buy.

Given all this media attention, what else could be said about the Y2K issue that has not already been said? Actually, quite a lot remains to be explored. In the rush to show the goofy activities of goofier groups of humans, scant attention has been paid to the real issues: 1) what the Y2K problem really is, 2) what caused it, 3) why should you care, and 4) why you will not be safe after January 1, 2000, even if we are fully Y2K compliant.

What's Really the Y2K Problem?

The Y2K problem is the generic term for a family of date-related problems. Simply put, many software programs may not operate correctly on or after January 1, 2000. The identification and handling of leap days and/or leap years may be incorrect; the computation of time intervals after and across the millennium may be wrong.

Some devices with date-related firmware, such as the BIOS (Basic Input/Output System) of many PCs and embedded microprocessors may also operate incorrectly. This is the so-called embedded systems problem of which much has been written but little is known. Suffice it to say that the problem is not as pervasive as "Scary" Gary North has alleged.

Regardless of the perceived severity of the problem, it all has to do with software and firmware, not with hardware. What's more, the problems may not all show up right away. Many critical dates exist other than January 1, 2000.

So, is this the real Y2K problem? NO! The real Y2K problem is bad software design and implementation. Poorly architected software is the reason that we have the Y2K problem. Note that this problem has nothing to do with dates or times. It has to do with how we write software, the qualifications of who writes the software and how we use software to run our businesses.

Where to Look for Problems

Contrary to popular belief, the Y2K problem is not a "mainframe disease". Desktop PCs, Laptops and midrange systems have the Y2K flu, too. The main problem sources by category are BIOS firmware, operating system, operating system utilities, compilers, link libraries, middleware, third-party applications and in-house custom code.

The SEC (Securities and Exchange Commission) has required all publicly traded companies to furnish it with information as to their “Y2K readiness”. These companies are required to perform an assessment to evaluate their Information Technology (IT) infrastructure in this regard. Companies are also encouraged to provide a plan for repair and/or remediation to ensure Y2K compliance in a timely manner. Shareholders have also been quite aggressive about requesting this information.

So, What’s the Point?

All of the above has been said before; what’s new and different? There are still several critical fun-facts. First, the root causes of Y2K are systemic, and they are still very much with us. Second, these causes are generating new problems right now that will be a lot harder to find and a lot more expensive to fix than Y2K. Third, few organizations are aware of this potential pitfall and may be severely crippled when software errors occur.

The one nice thing about Y2K is that if your business has it, your competitor probably has it, too. If everyone at the track meet has the flu, the race is still reasonably fair. The more insidious and damaging software problems are those that only your organization has and that your competitor does not. In this case, only you show up to the track meet with the flu; everyone else is fine. You’re unlikely to win the race, or even finish. Such software problems can destroy a company’s competitiveness and can be fatal to the business.

The only solution to this problem is prevention. The causes of Y2K (i.e., bad software) have to be studied, and the situations that lead to it better understood. Only then can preventive measures be taken. Only then can good software be consistently designed. Only then will you be safe.

What Causes Bad Software and Why It Matters

In the business environment, software is ubiquitous. IT budgets are expanding, and we are more dependent upon the correct functioning of computers and software than at any time in the past. The Y2K problem and its attendant hysteria is an eloquent testimonial to this interdependence of man and machine. This trend shows no sign of abating and, in fact, will increase in the foreseeable future. Designing correct, reliable and safe software will be the main issue in the coming millennium.

A primary cause of bad software is the tremendous demand for IT and factory automation systems. This high demand puts an unbelievable time pressure on software suppliers and systems integrators to get the job done on schedule, regardless of the number of bugs. Time-to- market is more important than getting it right.

Another related cause of bad software is that there is insufficient time and money to do the job right. Software projects are invariably underfunded, and the completion dates are almost invariably missed. Software project management is just beginning to evolve, and it is still more an art than a science.

Underestimates of system longevity also contribute to the bad software problem. Why plan more than a few years ahead when there’s no budget to do so? Project managers are paid and promoted based upon short-term metrics. None of them get much credit for designing systems that work too far into the future. In fact, there are financial incentives not to do that. An “upgrade” or ”fix” can always be sold at a later date, long after the customers have securely chained themselves to the current software version and cannot easily change horses.

One of the biggest causes of bad software is the simple fact that software purchases and users are generally completely clueless about quality workmanship and suppliers. They have little idea of what to look for, what questions to ask and how to separate fact from fiction. The best marketed programs and software systems get the most air time and become de facto "standards," even though there is little unbiased, trustworthy evidence on which to make an informed buying decision.

In sharp contrast to cars and other equipment, buying software generally places obligations and constraints on future buying decisions. Many companies, having standardized on a certain word processor merely because the site license was cheap, found that the cost to convert all their important documents to a better word processor far exceeded the original purchase price of the word processor. Choosing software merely on the basis of acquisition cost and ignoring future operational dependency and flexibility is arguably one of the biggest mistakes that can be made.

The Programmers

It may come as a surprise, but there are universal software quality, reliability and safety standards. This is in sharp contrast to consumer products where safety standards and testing laboratories are in abundance. Software purchasing remains very much "caveat emptor." This situation has changed in the UK, where the Court of Appeals ruled in October, 1996, that software should be "fit for purpose", i.e., it should be free of major bugs. This Court of Appeals ruling also means that software vendors' attempts to limit their liability will be themselves limited by the Unfair Contract Terms Act of 1977.

Here in the U.S., things are different. There is no universally recognized, formal certification process required to be a programmer. Some programmers are graduates of CIS (Computer and Information Science) programs, some are engineers and many are neither. Novell and Microsoft have tried to create proprietary certification with their CNE and MCSE training. Many states have made such titles illegal because they mislead the public on who is really an engineer. Graduates of such training are not required to have an engineering degree or a PE (Professional Engineer) license, so they cannot be called engineers. This effort is in the public interest because software impacts public safety. By way of information, Ohio has rendered the MCSE title unusable unless you are an actual engineer. Nevada also has strict engineer title laws.

Another interesting and little-known fact is that the science of software is still in its infancy! We still do not know how to produce large pieces of software that are consistently bug-free. Software is largely hand-crafted, and trial-and-error is the rule. (What are Beta sites for?) The plethora of platforms and development tools prohibit universal standardization, and with good reason. Whatever platform and operating systems are chosen today as "the standards" will certainly be obsolete within a few years.

Many organizations have made the mistake of early and excessive standardization ,and a large number continue to make it. There is much yet to invent in the computer hardware and software world. Insistence on one system as the standard at this point would be quite premature.

The "science" of computer science has a long way to go. Few useful software development paradigms exist, and the graduates are not adequately trained in their use or are even aware of their existence. The professors themselves are ignorant of current software development practices and have little to offer their students in the way of helpful suggestions. Having been a Computer Engineering professor at a large university, I can personally attest to the appalling lack of understanding of software engineering issues on the part of a few of my former colleagues.

Some organizations, such as Carnegie-Mellon's SEI (Software Engineering Institute) are combating this widespread ignorance. Local SPIN groups (Software Process Improvement Network), an outgrowth of CM's SEI, are also assisting in this effort. However, as long as time-to-market issues dominate software development (rather than safety or correctness), there will be little incentive to change.

Is It Really That Bad?

The answer depends upon who you are. If you are one of the minority in the software development or systems integration business, this situation is fantastic because it generates a never-ending revenue stream. Many companies are right now getting paid large amounts of cash to fix software problems that they helped create in the first place. The amount of the U.S. GNP that is devoted to fixing software and Y2K issues is truly amazing. If you are one of these organizations, why change? You are making lots of money now, so there is little incentive to get it perfect. People will buy it anyway, and there is little or no liability.

If you are part of the vast majority of software purchasers and users, bad software is a never-ending expense that does nothing to help your business. It does not increase sales, it does not decrease operating expenses and it does not improve product quality. In short, it hurts rather than helps.

What to Do?

There are no quick fixes to this growing problem. One thing, however, is almost certain. The growing body of lawsuits on software safety and reliability issues will lead to federal and/or state regulation. While no one welcomes this prospect, it is due to the inability and unwillingness of the software industry to police itself. The identical problem occurred with the automobile industry in the early 1900s. Now, we have the NTSB (National Transportation and Safety Board) and other organizations charged with ensuring travel safety.

In the meantime, here are some helpful suggestions which, if carefully followed, will reduce your risk. First, spend the bucks to do it right the first time. It is never cheaper to redo. If you are purchasing a new order-entry system, for example, investigate its design and underlying software architecture. Question the vendor to make sure that the programmers are degreed engineers or computer scientists, that they have experience in such systems and that they understand your business. If the system is expensive, ask to meet one of them or talk to them by phone. Don't excessively bend your manufacturing operation or your business to fit the vendor's software. This will cause far more trouble than it's worth.

Plan for "rolling upgrades" with system segmentation. Use multi-vendor standards for GUI, database access and network communication. That way, you can upgrade portions of your system without disturbing the rest of it. Multi-vendor standards ensure that you have alternative sources for critical pieces of software. If you cannot get access to your data unless it's through a single-vendor's proprietary interface, shy away from that.

A good technique that is becoming increasingly popular is to seek performance guarantees from the developer and be willing to pay for them. Many vendors won't bid on such jobs, but many will. For some extra up-front money, you can buy yourself a lot of security. Note that this is something different that simple insurance, which only compensates ex post facto and doesn't help you run things in a crisis.

Finally, make your choice because it works and it's reliable, not because it's cheap. The money that you save will far outweigh the little extra spent in up-front cost.

Editor's Note

As the 1998-99 "Contact" publishes its final issue for the season, the editors wish to thank those members who participated by contributing informative articles, news about meetings and events, and their valuable time to the Section. The "Contact" wouldn't exist without all of you!

We look forward to resuming publication again with the September, 1999, issue, which we hope to publish in our new electronic format. Remember, announcements of Fall meetings and plans should be submitted via E-mail to Chairman Stephen Phillips at smp2@po.cwru.edu. Deadline for the September issue is August 10.

We hope to hear from all the Section members next fall. Thanks for a great year!

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