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**THE  
SUNCOAST  
IEEE SIGNAL**



THE INSTITUTE OF ELECTRICAL AND ELECTRONICS ENGINEERS, INC.

<http://ewh.ieee.org/r3/floridawc>      Volume 47 - No. 1      January 2004



**Tour of Solid State Power Control Engineering  
and Manufacturing Facility**

*Presented by PES/IAS FWCS*

**Date & Time:** Tuesday, 20<sup>th</sup> January 2004  
**Refreshments:** 5:30 PM – 6 PM  
**Tour:** 6 PM to 7:30 PM  
**Subject:** Manufacturing Methods and  
Engineering Design Techniques  
for Solid State Power Control  
Devices  
**Presenter:** Jim Mitchell, President and CEO  
of Motortronics, Inc.

**Location:** Motortronics, Inc., 1600 Sunshine  
Drive, Clearwater, FL  
**Cost:** \$5 per person  
**Reservations:** On-line:  
[http://www.weiquality.com/fwcs-  
meetings/](http://www.weiquality.com/fwcs-meetings/)  
**Questions:** Call Tom Blair at  
(813) 228 – 1111 Ext 46171  
E-mail: tom\_blair@ieee.org

**Detail of Facility:** PES/IAS West Coast Chapter of IEEE invites you to an evening tour of a local solid state power control engineering and manufacturing facility. Methods of power control design and manufacturing will be presented and a tour of the manufacturing and testing facilities will be presented. If available, a demonstration of the testing procedures for some of their devices will be presented.

Motortronics is an engineering and manufacturing firm that specializes in solid-state electronic power controls. They design and manufacture devices such as SCR based AC and DC solid state power controls for non motor loads, electronic brakes and motor winding heaters for motor loads, variable frequency drives that range from fractional HP and 120 volt supply to 400HP 460 volt supply, and motor soft start systems that range from fractional HP 230 volt supply to 15,000 HP, 15KV supply.

**Directions from Tampa:** Take SR-60 (Gulf-to-Bay Blvd) west toward Clearwater approx. 12 miles. Turn right on S. Belcher Road / CR-501 and travel 0.5 miles to Logan Street and turn left onto Logan. Follow to end and turn left on Sunshine Drive.

**Directions from St. Petersburg:** Take Roosevelt Blvd / FL-686 west to US19. Travel North on US19 approx. 3.5 miles to SR-60. Take SR-60 west to Belcher. Turn right on S. Belcher Road / CR-501 and travel 0.5 miles to Logan Street and turn left onto Logan. Follow to end and turn left on Sunshine Drive.



*IEEE FWCS Executive Committee  
Wishes All Its Members And Their Families  
A Very Happy and Prosperous New Year 2004!!*



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THE SUNCOAST SIGNAL is published monthly by the Florida West Coast Section (FWCS) of the Institute of Electrical and Electronics Engineers, Inc. (IEEE). THE SUNCOAST SIGNAL is sent each month to members of the IEEE on Florida's West Coast. Annual subscription is included in the IEEE membership dues. The opinions expressed, as well as the technical accuracy of authors, advertisers or speakers published in this newsletter are those of the individual authors, advertisers, and speakers. Therefore, no endorsement by the IEEE, its officers, or its members is made or implied. All material for THE SUNCOAST SIGNAL is due by 7<sup>th</sup> day of the month preceding the issue month. Address all correspondence to:

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## Chair's Comments

By John Conrad



As you *read* these words I suspect that Christmas is a fading memory and the New Year has already started. However, as I *write* these words, Christmas shopping still lies ahead and I know that I will have to deal with rising panic as I run out of time! I have more immediate issues to deal with however as I am on a flight to Boston even though Logan airport has been closed for the last 24 hours due to a heavy dumping of snow by a double Nor'easter. I have every confidence that the skill of the Logan snowplows and our pilot will get us safely on the ground.

Before I left on this trip, I had the forethought to check on the IEEE Boston Section's web site and found that I could attend an IEEE meeting every evening during my stay. I considered a talk on software reliability but finally selected a talk at MIT by Paul Graham on Spam Filtering. Paul Graham is a well-known guru on spam and is the author of the software *Spam Bayes* that I recently installed on my computer. It is a wonderful tool, which has virtually eliminated the menace of spam from my computer. I am really looking forward to listening to his words of wisdom. I mention all this as a tip to all you members who are also business travelers. Check the local IEEE section web site before your trip and you may be surprised at the alternatives to lonely evenings watching TV in your hotel room. Not many sections are as active as Boston but there are many offerings in the major cities across the country. Take advantage of your membership!

Thank you.

## 2004 Review Seminars For PE Electrical & Computer and EIT/FE APRIL 16 and 17 Examinations

**Review seminars for the PE (Electrical and Computer) and Engineer In Training / Fundamentals of Engineering (EIT/FE) exams will be held:** Mondays, January 19 through March 22 for the EIT/FE Exam & Thursdays, January 8 through March 25 for the EE Exam. Seminars are conducted from 7-10 P.M. (Monday or Thursday) for ten weeks for the FE and twelve weeks for the EE. The registration fee is \$395 and includes text. The seminars will be held on the USF main campus in Tampa and **will also be available via Internet.**

To register, contact: Edward Scott, P.E., PO Box 14042, (EC37), St. Petersburg, FL 33733. Email: [Edward.Scott@pgnmail.com](mailto:Edward.Scott@pgnmail.com); Phone (727) 384-7544, FAX (727) 384-7865

Pinellas Chapter, Florida Engineering Society

# Celebrate Engineering 2004

**You are invited!**

**Mark your calendar today!**

**Date:** Friday, 13<sup>th</sup> February 2004  
**Time:** Social, Registration: 5:30 – 7:00 pm  
Dinner, Events: 7:00 – 10 pm  
**Place:** A LA CARTE EVENT PAVILION, Dana Shores Road,  
West of Tampa Airport. Check their website for directions  
and pictures of elegance! <http://www.alacarteeventpavilion.com/>  
**Cost:** \$25 per person (What a bargain – subsidized by **your** Society!)

Reservations **must** be made in advance for planning purposes – no reservations taken at the door! Contact John Conrad at 813-926-4004 for tickets or reserve online at: <http://weiquality.com/celebrate2004> Credit cards are accepted!

**DON'T DELAY - RESERVE NOW - WE WANT TO SEE YOU THERE!**

Join us for the **LARGEST GATHERING** of engineering professionals, companions, and guests! South from Naples, North to Inverness, East of Lakeland and Winter Haven!

What is the Celebrate Engineering Banquet about? Five major engineering societies in the Tampa Bay area joined forces to promote engineering awareness within our own societies and the local community, in conjunction with the promotion of National Engineers Week, co-sponsored by **your** society and many other engineering societies during early February.

## **AWARDS TO HEROS!**

Each society will recognize outstanding officers and members for their contributions and accomplishments in the engineering community and profession, for engineering and technical achievement. Join us in congratulating them for their accomplishments!

## **ENTERTAINMENT!**

For your most memorable experience of the year we have lined up a complement of entertainment to enhance your enjoyment of the evening! Start out with a musical serenade by local musicians to put you in the mood throughout the evening. Wander over to the caricaturist, to have your face emblazoned on canvas in a silly pose! A locally renowned personality will be our MC for the evening! He will not only pace the meeting, but also keep us all in stitches with his stories and anecdotes, plus hand out many **DOOR PRIZES!**

## **GUEST SPEAKER!**

Our Keynote Event will be a presentation by Dr. Robin Murphy, Director, USF Center for Robot-Assisted Search & Rescue! A video and robot demonstrations will be highlights of the evening. Don't miss this presentation! You can find out more about Dr Murphy's accomplishments at her website <http://www.csee.usf.edu/~murphy/>

## **SPONSORS/VENDORS!**

A number of vendors and sponsors have again graciously agreed to support our Celebrate Engineering Banquet. Because of their generous support, the Committee is able to provide this elegant event to our members at a **significant discount (50%)** over what it actually costs us to provide it to our members! New vendors/sponsors who would like to participate in our wonderful venue should contact Richard Beatie at [r.beatie@ieee.org](mailto:r.beatie@ieee.org) or John Chevalier at [ChevalierEngCon@aol.com](mailto:ChevalierEngCon@aol.com). All contributions are tax deductible!



## Wireless and Microwave Technology Conference 2004 Radisson Sand Key, Clearwater, FL April 15-16, 2004

The 6th annual IEEE Wireless and Microwave Technology (WAMI) Conference will be held on beautiful Sand Key beach in Clearwater, FL, on April 15 and 16, 2004. The conference will address up-to-date multi-disciplinary research needs and interdisciplinary aspects of wireless and RF technology. The program includes oral presentations, poster presentations, and tutorials.

Prospective authors are invited to submit original and high-quality paper summaries for presentation at the WAMI conference and for publication in its Conference Record. The technical program will cover wireless communication systems and RF technologies.

### Important Dates

**Extended Abstracts Due:** 15<sup>th</sup> January 2004

**Author Notifications:** 1<sup>st</sup> February 2004

**Final Papers Due:** 25<sup>th</sup> February 2004

**Conference Registration:** Please see <http://ee.eng.usf.edu/WAMI/conferences/2004/>.

**Early registration ends March 1, 2004. Special hotel pricing ends March 14, 2004.**

### Five FWCS Members Elevated to IEEE Senior Membership

The following five Florida West Coast Section Members were recently elevated from Full Membership to Senior Membership: John Conrad, Michael E. Haas, Ralph D. Painter, Xuejun Sun, and Daniel Teijido.  
Hearty Congratulations!!



All material for  
**THE SUNCOAST  
SIGNAL** is due by  
7<sup>th</sup> day of the  
month preceding  
the issue month.

## Suncoast Signal

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*For more information, contact the Signal editor Srinivas Katkooi*

*Email: [katkooi@ieee.org](mailto:katkooi@ieee.org) Phone: 813-974-5737*

## **Save The Date!**

### **PES/IAS Engineer's Week Luncheon**

**Including a Presentation by  
Gerry Cauley, Director - Reliability Performance  
North American Electric Reliability Council (NERC)**

**"August 14, 2003 Northeast Blackout -  
Lessons Learned and Recommendations"**

**February 26, 2004**

### **IEEE Membership Dues - Special Circumstances**

IEEE realizes that economic circumstances may impact some members' ability to pay the full amount of IEEE membership dues. For this reason, the following special circumstance categories have been established. Special circumstances are not available to Student members. Only one category may be claimed in any year.

**Minimum Income Provision:** Applicants who certify that their prior year's income did not exceed US \$11,300 or equivalent are granted a 50% reduction in IEEE dues, regional assessment and dues for one IEEE Society and its optional publications. Please submit written certification with application and payment. Student members are **NOT** eligible.

**Retired Provision:** A retired member, not gainfully employed and not qualifying for Life Member Status, on attaining the age of 62 years, may apply for a 50% reduction in dues and assessments. An individual who qualifies for the IEEE Retired Member category may continue any and all Society memberships held for not less than the 5 prior years. Optional publication fees equal those established for Student members.

**Unemployed Provision:** A 50% reduction in membership dues, Society dues, other subscriptions and assessments are available to a member or applicant who informs the IEEE Operations Center Office that he or she: (1) has become involuntarily unemployed and is seeking reemployment; or (2) has become voluntarily unemployed for reasons of raising children. Statement of continued unemployment shall be provided with each annual dues payment. In the case of voluntary unemployment, the provisions of this Bylaw shall not exceed four years. The reduced payments may not be made in installments. IEEE Career Resources can be found at <http://careers.ieee.org>

### **Calling All Science Fair Volunteers!**

IEEE members are encouraged to help out as judges in the local science fairs. Most of the fairs will be held around the end of January or early February. Updates will be posted via the science fair website located at: <http://www.dionson.com/ieeefair>. Interested members can go to the website for more information. Alternatively, members may contact Carlo at 813-621-5935 or [carlomagno@ieee.org](mailto:carlomagno@ieee.org).  
Reminder about volunteer signup for science fairs <http://www.dionson.com/ieeefair>

**Joint SPIN/IEEE Meeting**  
**Tampa Bay SPIN (Software Process Improvement Network) Presents**  
**VS.NET & CMMI**  
**By Mr. Richard W. Root**

**Date& Time:** Tuesday, 27<sup>th</sup> January 2004  
**Refreshments:** 6 PM  
**Meeting:** 6:30PM to 7:30 PM  
**Location:** Grand Salon, Plan Hall, University of Tampa  
**Questions:** Farah Tavakoli, Ph: 1-800-763-8522 (X: 4561) Email: [farah@softcomputer.com](mailto:farah@softcomputer.com)

*Come and Learn This New Technology and How it Can Benefit You*

**Executive Managers:** Do you need to know if this will reduce the development time?

**Programmer/Engineers:** The use of the intelligent drop down boxes used in coding and the ability to debug and run your programs on the fly. Can it be true? Is it that simple?

**QA/PI/Product/Project Managers:** Document development using commenting from the code. Developing processes that can be easily used and run during the code Configuration Management for Managers and Developers.

Visual Studio Dot Net (VS.Net) is the latest Integrated Development Environment (IDE) tool to be developed by Microsoft used to develop applications that can run in the windows environment and uses several different languages (C sharp (C#), C++, and Visual Basic (VB.Net)) to support the code development.

The meeting will introduce VS.Net and the strength of some of the uses in CMMI process. Web based applications will be discussed that lead us to some weaknesses that can hurt a developer in the process

**About the Speaker:** Richard W. Root holds a Masters a Science, Management degree and a B.S. degree in (Computer) Electrical Engineering. He is currently the Chief Software Engineer for rapid prototyping of Commercial off the Shelf (COTS) software utilizing Microsoft Visual Studio.Net at Exceptional Software Strategies. He is developing C# programs that execute to download Certificate Revocation lists from several different servers located around the country. He is responsible for integrating the new software applications into existing software architectures to enhance the Public Key Infrastructure (PKI) implementation.

**About SPIN:** According to Software Engineering Institute, a “Software Process Improvement Network is [a group] comprised of individuals who want to improve software engineering practice. The individuals are organized into regional groups called “SPIN” that meet and share their experiences initiating and sustaining software process improvement progress.” The Tampa Bay SPIN (Software Process Improvement Network) was founded in June, 2000 when 15 people from 8 organizations got together to start a grassroots effort to bring process improvement professionals together to meet and learn. The Tampa Bay SPIN is governed by a Steering Committee that meets monthly to organize and plan SPIN meetings and other activities for the group.

**General Meeting Information:** Collaboration between SPIN and the University of Tampa is to promote educational opportunities for Software Process Improvement throughout the Tampa Bay community. Meetings are traditionally held on the last Tuesday of the month at University of Tampa in Grand Salon, Plan Hall. A sponsor company provides “Dinner-type” refreshments; we request a \$5 donation to cover SPIN operating expenses. Our events start at 6:00PM with a mixer; the meeting itself begins at 6:30PM sharp, followed by a presentation relevant to process improvement, then door prizes are given away. The meeting ends by 7:30PM. We pride ourselves on starting and ending on time! SPIN’s membership has reached 410 members representing 112 companies and 25 independent consultants (as of Feb/02).

**How to Become a Tampa Bay SPIN Member:** Just email your company name and your phone number to [cmooers@thetainfo.com](mailto:cmooers@thetainfo.com) and we’ll add you to our membership roster. You’ll soon start receiving meeting notices & other event info regularly. To learn more about SPIN, visit <http://www.tampabayspin.com>



Complete Conference Information & Registration Form are available at [www.southcon.org](http://www.southcon.org)

Southcon Exhibit Hours			10-5		10-4			
Day Planner			Tues. 1/13		Weds. 1/14		Thurs. 1/15	
			AM	PM	AM	PM	AM	PM
Southcon Conference Hours			9-4		9-5		9-5	
<b>Keynote Luncheon (Noon to 2:00 pm)</b>								
K1	What Lies Ahead for the Electronics Industry?, Susan Mulcahy, Vice President and Director of Research, Reed Electronics Group	\$25						
<b>Special Events</b>								
SP1	Workshop in a Box: An Introduction to Designing with PICmicros using the PICKit1 Starter Board	\$50						
SP2	Take the Low Power Challenge: Develop Ultra Low-Power Embedded MCU Application	\$50						
<b>Design and Manufacturing Tutorials (Lunch Included)</b>								
SC1	Analog Electronic Design	\$310						
SC2	Advanced Signal Conditioning Design	\$310						
SC3	BGAs - Layout Techniques, Routing, PCB Stackups and Rework Issues	\$310						
SC4	EMC Printed Circuit Board Design Practices	\$310						
SC5	FPGA Design with VHDL - Basics for Design Engineers	\$310						
SC6	FPGA Design with VHDL - Advanced Topics	\$310						
SC7	FPGA Design with VHDL - Test Benches and Design Verification	\$310						
SC8	Grounding, Bonding and Shielding	\$310						
SC9	Opto-Electronic Design Considerations	\$160						
SC10	Reflow and Wave Soldering with Emphasis on BGAs	\$310						
SC11	Thermal Aspects of Electronics Cooling	\$160						
SC12	Troubleshooting the SMT Manufacturing Line - Defect Causes & Solutions	\$310						

CEUs will be awarded for all tutorials.

**Register Early** – Prices above are effective through **December 23, 2003**. Beginning on December 24, the cost of each course increases by \$50.

Conference Hours	
Tues., Jan. 13	9 AM – 4 PM (9-Noon & 1-4 PM)
Weds., Jan. 14	9 AM – 5 PM (9-Noon & 2-5 PM)
Thurs., Jan. 15	9 AM – 5 PM (9-Noon & 2-5 PM)

**Special Assistance** - If you require special assistance covered under the Americans with Disabilities Act, please contact us at (310) 524.4100, Ext. 218 by December 24.



January 14-15, 2004  
Orange County Convention Center  
Orlando, Florida

## Registration Form

First Name \_\_\_\_\_ Last Name \_\_\_\_\_

Job Title \_\_\_\_\_ e-mail \_\_\_\_\_

Company \_\_\_\_\_

Mailing Address \_\_\_\_\_ Mailstop \_\_\_\_\_

City/State/Zip/Country \_\_\_\_\_

Phone \_\_\_\_\_ Fax \_\_\_\_\_

**Southcon Exhibits (Weds. and Thurs. – January 14 & 15)** No Charge

**Keynote Luncheon (\$25)** Subtotal \_\_\_\_\_

**Engineering Tutorials (All courses shown below include lunch)**

<input type="checkbox"/> SC1 (\$310)	<input type="checkbox"/> SC2 (\$310)	<input type="checkbox"/> SC3 (\$310)	
<input type="checkbox"/> SC4 (\$310)	<input type="checkbox"/> SC5 (\$310)	<input type="checkbox"/> SC6 (\$310)	
<input type="checkbox"/> SC7 (\$310)	<input type="checkbox"/> SC8 (\$310)	<input type="checkbox"/> SC9 (\$160)	
<input type="checkbox"/> SC10 (\$310)	<input type="checkbox"/> SC11 (\$160)	<input type="checkbox"/> SC12 (\$310)	Subtotal _____

**Special Events**

SP1 (\$50)

SP2 (\$50) Subtotal \_\_\_\_\_

**Grand Total (total of all subtotals above)** **Grand Total \$** \_\_\_\_\_

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Check (payable to Southcon 2004)

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**Please note:** Your credit card statement will show "ECI - Electronic Conventions, Inc." as payee – not "Southcon 2004".

# Students' Corner

## IEEE Student Branch, USF

The hard work and long hours our graduating Seniors put into their final projects were on display on Friday December 5<sup>th</sup>, 2003, as they presented their senior design projects at the Ninth Annual Mini Circuits Presentation. Projects ranged from a Crystal AM Radio to Frequency Voltage Converters, and there was certainly a great amount of talent evident in all projects. The following students were recognized for their outstanding projects, Carrie Judus, Evan Brewer, Kharlile Barnaby, William Rothenbach, Daniel Quintela, Anthony Shields, and Larry Mastromoro. The IEEE Student Branch would like to congratulate all students on their hard work and efforts they put forth into their projects and wish them all the best as they head off into the engineering workplace.

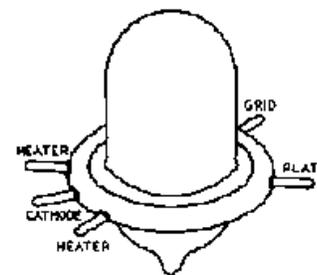
With all our returning officers refreshed and ready to work after a restful break, the Student Branch has many new interesting ventures to present. Our joint picnic with IEEE-FWCS, a tour of Harris Corporation with the student branch of the American Society of Mechanical Engineers, Engineering Fun Day with the College of Engineering and the National Society of Black Engineers, and, of course, our annual laser show at EXPO 2004, are just some of the things the students can look forward to this upcoming semester. We would like to encourage all our students to participate in as many events as they can throughout the semester. To contact the IEEE Student Branch please email us at [ieee@eng.usf.edu](mailto:ieee@eng.usf.edu) or call 813.974.4776. Have a great semester everyone!

## Brain Teaser Challenge Column

By Butch Shadwell

**December BTC Solution** Due to the publishing schedule, at the time I am writing this I have only received one correct answer for this BTC. If you recall last month I was acquainting you with my cousin Otis and “these vacuum tubes (that) were named for the fruit/nut of a common tree. With just this much information, can you tell me what the common name for this type of tube was? And to really impress me, what were the five leads connected to inside the envelope?”

Of course the old timers in the audience immediately recognized “acorn” tubes. They were used in many applications that required very small size and perhaps higher resistance to vibration. Charles Lord sent me the attached photo. As you can see, two leads were for the heater, one lead was the cathode, one lead was the grid, and the last one was to the plate or anode. I started working in electronics 40 years ago, and the engineers of that era and before were brilliant. When I think about some of the great designs our predecessors did with such limited technology, those guys were real pioneers. I hope that that creative genius and tenacity is still alive in our numbers today.



Drawing of original domed version of the 355 triode. Tube measured 1 3/8" from top to bottom.

**January BTC** The other day as I was reading a book about medieval England, I fell asleep and had the most realistic dream. In this dream I was a famous knight. I was known throughout Europe for my unmatched skill with the sword and lance. The dream was so realistic, I found myself often gasping from the pungent odors from everywhere and everyone.

This was not a bad dream, as dreams go. After having been named MVP on the tournament circuit for the last five years, I had collected some great endorsement deals, set myself up with a huge castle, and was having to beat off the jousting groupies with a stick. Except for the constant danger of getting my head cracked with a lance, and of course the smell, it was a pretty good life.

In order to impress the local wizard, I thought I would make a fire start magically. Somehow my dream alter ego found a 9-volt alkaline battery, and managed to recall that they have an output impedance of about 18 ohms. I did mention that this was a dream right? Anyway my medieval self thought about taking the battery and attaching a length of wire to make a heating element with which to light a fire. Unfortunately, probably due to a few too many head shots with a lance, I couldn't remember what resistance the wire should be to get the most power out of this battery to generate heat in my little wire fire starter. I'm sure that all of my readers know the answer to this one. What is the optimal resistance of my older heating coil?

Reply to Butch Shadwell by December 20 at [b.shadwell@ieee.org](mailto:b.shadwell@ieee.org) (email), 904-223-4510 (fax), 904-223-4465 (v), 3308 Queen Palm Dr., Jacksonville, FL 32250-2328. (<http://www.shadtechserv.com>) The names of correct respondents may be mentioned in the solution.

## January 2004 Calendar of Events

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
				1 <i>Happy New Year!!</i>	2	3
4	5	6 5:30-7:30PM <i>IEEE FWCS Excom Meeting TECO Hall, Tampa</i>	7	8	9	10
11	12	13 9am-4pm <i>Southcon 2004, Orlando</i>	14 9am-5pm <i>Southcon 2004, Orlando</i>	15 9am-5pm <i>Southcon 2004, Orlando WAMI Conf. Abstracts Due.</i>	16	17
18	19	20 6-7:30pm <i>PES/IAS Tour of Solid State PowerEngg Motortronics, Clearwater, FL</i>	21	22	23	24
25	26	27 6:30-7:30pm <i>SPIN/IEEE Meeting on VS.NET &amp; CMMI Univ. of Tampa</i>	28	29	30	31

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