



## Madison Section Newsletter

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### News/Announcements

### Review of Previous Meetings

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#### News/Announcements

- **Officer Change:** Hugh Schmidt has resigned as Section Chair and has taken the Section Student Activities Chair role. Scott Olsen has been selected by the Executive Committee to be the interim Section Chair. Scott has outlined his intentions here:

Hello everyone,

I am interested in remaining the Executive Committee Chairperson after December 31, 2021.  
I'm running on the platform of:

- 1). Providing engaging meetings for the Section, both in person and from online interesting sources.
- 2). Attracting young professionals, more professionals, and perhaps more students (I realize students have their own group). This includes gaining more volunteers.
- 3). Working on increasing the diversity of the Executive Committee.

I'm familiar with the structure of other professional groups such as ASHRAE and WAEE which may help strengthen IEEE. I also hope to make the meetings more fun! Please let me know if you have any questions.

Scott  
[olsens93@gmail.com](mailto:olsens93@gmail.com)

- **Call for Nominations: You Can Get Involved!**

Help your local Section of IEEE, as well as helping your career. IEEE Madison is always looking for people who want to take a more active role. This kind of experience will not only help the world's premiere technical and professional organization, it will hone your leadership skills, as well.

Some of the opportunities available include:

- Webmaster
- Ethics advisor
- Auditor
- Industry outreach
- Elected officers
- Technical chapter leadership
- Technical meeting planning

You may have another way to help out, one that we haven't even thought of.

If any of this sounds interesting to you, contact the Section Vice

Chair, Mike Stemper at <michael.stemper@gmail.com>. Getting in touch doesn't commit you, so feel free to explore the options even if you're not sure how you could best contribute.

With elections for 2022 officers coming in a little over a month, it's a great time to reach out.

## Meeting Review

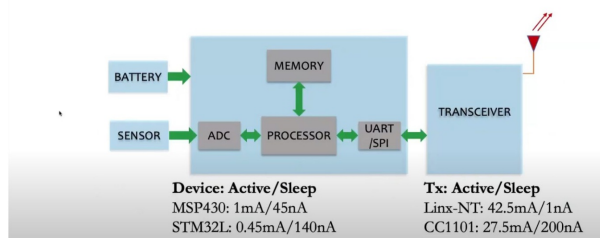
### IEEE Madison: "Fundamental Challenges of Low-Power Wide Area networks (LPWAN)"

**Talk:** Bhuvana Krishnaswamy an Assistant Professor in the Department of Electrical and Computer Engineering of the University of Wisconsin-Madison gave a Webex presentation on October 21, 2021 on low power wireless applications. Her team is working in the agriculture industry monitoring such things as soil condition and temperature. Her talk included: Wireless data delivery over long distance is power consuming and challenging for large-scale deployments. Low-power wide area networks (LPWAN) are increasingly in need to develop wireless solution that satisfy the following requirements (1) Increased battery life, (2) Longer communication range, (3) Large-Scale, and (4) Low-cost. Existing strategies for addressing low-power and long-range do not co-exist efficiently in a large-scale network. In this talk, the fundamental challenges in meeting the above needs of LPWANs was identified. Cross-layer strategies to address these challenges were discussed. Comparison to commercially available LPWAN solutions such as LoRa and SigFox were presented using experimental and simulation results.

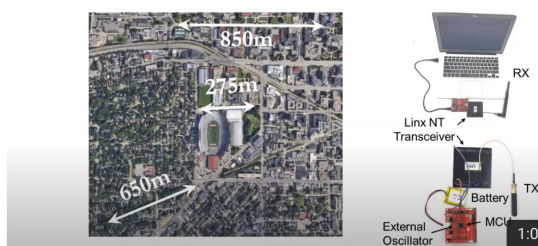
The primary research network, called "WiChronos" was implemented with off the shelf transceivers and Texas Instrument MSP430 processors. The network devices had objectives of long battery life and long transmission distances for an inexpensive sensor network. The modulation technique uses a pair of short duration transmissions, a "preamble" and a "postamble" of short duration with a variable time between them. The time between the two transmissions represents the data. Though the data rate was small (less than 1000 bps on the test network), the network was scalable to a large number of nodes over a distance of one kilometer or more.

A recording of the presentation is available at this link: [Fundamental Challenges of Low-Power Wide Area networks \(LPWAN\)](#)

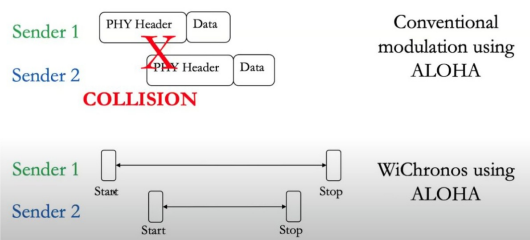
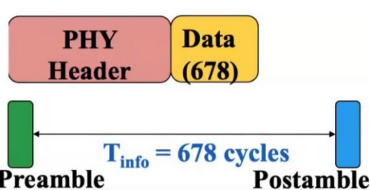
Energy consumption of a sensor module



WiChronos Prototype



Energy-based Modulations



### IEEE-Madison Slack Channel Established and Open to IEEE Members

- **What is Slack?:** Slack is a messaging application that works on most modern computing platforms, including cell phones. Many organizations use slack to quickly connect with people and conduct business. You can share files and create sub-channels for discussion. IEEE-Madison is using the free version of slack that has limited features.
- **Executive Committee Presence:** Members of the IEEE-Madison Executive Committee have joined a Slack Channel and will be available to discuss issues you might bring up.
- **For more:** See this YouTube Video [on Slack](#). Also see this site: [What is Slack?](#)
- **Get an Invitation to Join the IEEE-Madison Slack Channel:** at [Slack Channel](#).
- **Access it here:** [IEEE Madison Slack Channel](#)

### IEEE Madison Leadership

- Section Chair - Scott Olsen
- Section Vice Chair - Mike Stemper

- Section Treasurer - Matt Nowick
- Section Secretary - VACANT
- Webmaster - Nate Toth
- PES/IAS Chair - Mike Stemper
- PES/IAS Vice Chair - Dan Ludois
- PES/IAS Secretary/Treasurer- VACANT
- EMB Chapter Chair - Dennis Bahr
- Life Member Affinity Group Chair - San Rotter
- Life Member Affinity Group Vice Chair - Charles Cowie
- ECN Chair - Matt Nowick
- Young Professionals Chair - Thomas Murphy
- Section Student Activities Chair -- Hugh Schmidt
- Members at Large: Nate Toth, Clark Johnson, Craig Heilman, Dennis Bahr

## Membership Upgrades

Those interested in upgrading their IEEE membership level should be aware that the process has been streamlined with much of it on-line. The application process can start with your application as described on line [here](#). You will have to provide the names and IEEE numbers for three Senior Members in your field. The Madison Section Chair (Scott Olsen: [olsens93@gmail.com](mailto:olsens93@gmail.com)) can help, or attend the informal networking portion of the monthly Section meetings to meet the Section Board members and discuss your intention to elevate.

## About IEEE

The Institute of Electrical and Electronics Engineers or IEEE (read Eye-Triple-E) is an international non-profit, professional organization dedicated to advancing technology innovation and excellence for the betterment of humanity. IEEE and its members inspire a global community through IEEE's highly cited publications, conferences, technology standards, and professional and educational activities. It has the most members of any technical professional organization in the world, with more than 300,000 members in around 150 countries. The IEEE consists of 38 societies, organized around specialized technical fields, with more than 300 local organizations that hold regular meetings. Discover what IEEE Member Discounts can offer you. The Member Discounts portfolio consists of insurance products and programs for the home, office and travel, all at excellent group rates and reduced pricing. Visit IEEE Member Discounts to see what's available in your location and enjoy the savings. For more information, please visit: [IEEE.ORG](http://IEEE.ORG).

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