Fort Wayne ENGINEERS' Club

Engineers' News January 2019 Vol. 81 No. 5

www.FortWayneEngineersClub.org

Find us on

January Tour

Northeast Indiana Regional Coordinating Council (NIRCC)

200 E Berry St Suite 230, Fort Wayne, IN 46802

Thursday, January 24, 7:00 pm

Citizens Square, Room 030 (the nice "Courtroom", NOT the Omni room, in the basement)

The Director of NIRCC will provide an overview and then be open for serious give and take regarding virtually all transportation planning and priorities from now through 30 years into the future. NIRCC has a history of following through on

properly researched suggestions. They tend to effectively navigate political factors, various trends and fads, and funding sources.

The Northeastern Indiana Regional Coordinating Council is the agency designated by the Governor to perform general purpose planning on a regional basis for Adams, Allen, DeKalb, and Wells Counties. NIRCC coordinates with other planning efforts to maximize benefits to the respective communities. In addition, NIRCC provides regional transportation planning services for both rural and urban communities within its jurisdiction. Finally, NIRCC is heavily involved in various community development programs, both in the planning and implementation stages.

Contact Rod Vargo (416-0986) if needed.

Please Give Feedback

What is the best time on a Thursday for participation in tours?

Please direct this and any other feedback to Rod Vargo at rodvargo@comcast.net or leave a voice message at (260) 416-0986

FWEC Membership

The FWEC exists through funding of its membership. Please forward your copy of the Engineers' News to prospective members and encourage their attendance at tours. Remember, the FWEC is the best deal in town, annual membership is $10. We offer free monthly tours September through May. Please be sure to recommend FWEC membership to your colleagues and friends.

Northeast Indiana DiscoverE

This chapter of DiscoverE is a subcommittee of Fort Wayne Engineers Club and its annual cycle revolves around national "Engineer's Week" each February (officially the 17th-23rd this season). Pertinent dates for 2019 (see www.DiscoverE.in if needed):

- January 26 (Saturday): Future Cities competition (physical models) at Purdue University, Fort Wayne.
- February 8: deadline for reserving February 23rd Banquet tickets.
- February 16 (Saturday): Junior high school (i.e., middle school) Bridge Building competition (destructive testing) at Concordia Lutheran High School.
- February 23 (Saturday): High school level Bridge Building competition (destructive testing) at Purdue University, Fort Wayne.
- February 23 (Saturday) evening: DiscoverE Awards Banquet (awards, scholarships, and speaker) at Parkview Field.

December Social Summary

Rod Vargo and Joan Woerner Home

Our December 8 social was poorly attended because so many other groups decided this Saturday afternoon and evening would be ideal for their gatherings in order to

avoid conflicts anticipated later in December. The "Holidays" began well before Thanksgiving this year and December 8 may have been the busiest time of the entire Season. It appears FWEC repeatedly finds it best to continue scheduling activities on Thursdays.

The fourteen guests (plus six hosts) who attended were encouraged to help reduce a bounty of shrimp, pizzas, cheesecakes, salads, chips, and dips. We went through several gallons of hot cider. No one seemed disappointed.

The house was large enough that conversations abounded and not all were overheard by this writer, but here is a sampling:

- Items were on display from past FWEC tours.
- No one noticed the drone on a counter.
- Interest in "vocational" skills such as machining and CAD is increasing, driven by sheer demand and a shortage of workers with these skills. Some folks love machining and others found it boring. But, there is a range of careers embedded in any of our technical fields. For instance, a female accounting administrator at the social was about to begin courses on machining in order to work on and better understand activities on her shop floor, perhaps enjoy a change of careers.
- An alternative to 3D printing is stereolithography, which produces very different finished characteristics.
- Patent Law should be fundamental knowledge for engineers. Being a patent lawyer is seldom an immediate route to a good or steady income, particularly given student loans to pay off, but it is a functional and engaging career path.
- Electrical Engineering should be pondered as three lines of study, all typically well paid and lifelong careers: electricians; industrial technology (IT) majors; and (more or less theory) outright EE majors. All have subspecialties (esp. high versus low voltage) and require lifelong technical studies. All have different geographic and work flexibilities, hours, and potential burnout (figuratively and/or literally). Drop out for EE's peaks in the Junior year, after much expense and time, most often due to fundamental electromagnetic theory courses (which are complicated by revolutions now occurring in Physics).
- Industrial Technology and EE majors face rigid grade requirements in hiring, so any difficulty in college has lasting repercussions. Some universities also require applying each year for evermore-limited slots in these majors. Talk to a

range of parents and workers in all three fields, paying special attention to four-year and midlife success rates.

- Burnout and turnover of recent college graduates in glamorous gigs can be part of employer business plans. Cost of living at these locations and lack of personal time is often destructive.

- There seems to be a steady and sustained long-term niche in airliner mechanics (passenger and/or freight). The conventional "jet" engine has also evolved into turbofan propulsion (subsonic) where the rear turbine section has steadily expanded in diameter, length, and complexity in order to capture and transfer evermore power to a huge fan (effectively a high-efficiency propeller) inside the air inlet and to a more powerful compressor section to provide higher compression. The fuel efficiency of turbofans has increased over 20% in less than a decade due to increased ability to design compound curves and cords into the fan blades, and due to fuel combustion at higher compression ratios. The efficiencies have basically forced the retirement of super-large aircraft like the 747 (except some air freight) and A380 in favor of 737-787 sized designs. There can be as many as seven smaller aircraft (14 engines) displacing each jumbo (4 engines) and also providing scheduling flexibility. (See Singapore Airline's discussion, below.)

- Becoming self-employed is very frightening but seems to work out, at least over time. Being an employee can be unreliable, depending on one's field of engineering. Either way, requirements to learn and change never end.

- Maintaining a marriage or similar partnership long-term was a recurring factor in discussions regarding success throughout life.

- People live very normally without medications on one kidney.

- Virtual reality is great fun and has entered another level in its development. Current equipment isolates a person from their surroundings, which is primitive and potentially dangerous. The future is now unfolding in which computer effects are inserted into, or replace items in, a person's actual surroundings.

- There is much student interest in biomedical engineering but many topics are already well beyond initial development. Much of the remaining work is merely incremental tweaking and often flooded with engineers of all ages, potentially subject to layoffs. Powered exoskeleton concepts are finding widespread applications for injured and special-needs individuals, but have been largely abandoned in military applications as cumbersome and failure prone.

- Direct wire to nerve interfacing is also well along. This writer (Rod Vargo) could personally sense emanations from some electromagnetic devices and tried to pursue nerve interfacing in 1974, a career lifetime ahead of the curve,

but could not find funding despite being well received by university human physiologists. Much the same was true at the time for those already a decade into transferring genes with plasmids and viruses but precluded from publishing by the peer review process. Timing is everything.

- The GE campus might be a better location for the Locomotive #765 and train museum, compared to existing proposals. A GE building is on and served by an existing main railroad line (sturdy & financially viable), as well as being close to the restored Baker Street Station. Reinstalling railroad track elsewhere for a nearly-million-pound ground shaker would likely compromise old homes (on river sediments, many without normal foundations) and coal smoke is unlikely to be tolerated long-term by young parents. Several of us grew up with coal home heating and fondly enjoy 765's taste and aroma even a mile or more away, but doubt that would be the case on a regular basis.

- The Romans had an active and heavily defended sea route between the Mediterranean and Red Seas, via the Nile River, which is visible on satellite images.

- The Middle Eastern "holy lands" are cut by a rift valley which is well below sea level (includes the Dead Sea) and will form a sea route within 4 million years. No more than 135 feet of elevation, mostly sediments, keep seawater out at either end. Sections of the valley more than 200 feet below sea level represent an enormous amount of potential water pressure, so it seems strange that some rock layer or cracks are not already flooding the region. At least two similar basins exist, the Salton Sea and Death Valley of California. The Salton Sea basin has flooded periodically over the last few thousand years.

- Those of us from California view the Paradise and Malibu fires as combinations of well-documented drought cycles, forest management bans, and layers of human wishful thinking driven by politics.

- The reason for the nationwide cell-phone test alert on October 3 was that President Trump forced initial completion of an earthquake sensor system, especially along our west coast. The sensors can provide no more than 60 seconds warning, but that is enough for preplanned responders and equipment to get out of harm's way and remain assets instead of losses. The system had already spent millions of dollars during the last fifteen years but was nowhere near functioning when he entered the office. It also indirectly senses tsunami potential.

- Many of us think of stratovolcano mountains as long-term landscapes. Average life expectancy of a stratovolcano is only 600,000 years and there are a hundred of them in western North America alone. Volcanologists do not understand why Mammoth Mountain (southern California) did not destroy itself

in the 1990s. It is the sole anomaly in worldwide data used to predict explosive eruptions.

- Those efficient turbofan engines (and relaxed international tensions) now allow scheduled airline flights approaching 9000 miles nonstop, and perhaps an alternative to widely advertised river cruises. Singapore Airlines offers seventeen nonstop flights a week across the top of our globe between Singapore and various points in the United States. If winds aloft allow, the Newark-Singapore flight crosses the Baffin Bay, the North Pole, Siberia, Mongolia, central China, the Himalaya/Burma "Hump" region, and the length of the Malay Peninsula. Beware that any individual departure changes route based on wind and other factors, and day length varies with season. Round-trips seem to price $7,000 (Premium Economy) to $15,000 (Business Class) but appear mostly all-inclusive cost-wise.

- Modern airliner flights equal or exceed the dirigibles of old in almost every way. But, two modern rigid airships are in use for heavy lifting. Each consists of two half-length airships affixed side-by-side, which greatly improves stability in all three axes. (Axes is the only word in English that is the plural of three different singular nouns.)

Future Tours

February tour: Franke Plating Works, Inc. 4:30 PM Thursday, February 21. 2109 E Washington Blvd, Fort Wayne, IN 46803 (2 blocks east of Anthony Blvd.)

Visit a family business in operation continuously since 1930, progressively expanding and updating an array of options for anticorrosion, appearance, and other features of iron, steel, copper, aluminum, and more. This should help our understanding of the metal product or part durability in daily life.

March tour: TekVenture's new location and expanded areas of interest. March 21, 2019, at 1550 Griffin Street, near the Hosey Dam. Starting time will probably be 6:30 or 7:00 pm.

TekVenture has steadily upsized and updated since its start in a trailer downtown. Current plans for March 21 call for TekVenture's specialists to demonstrate the work areas and guidance which are available to young people and adults. A few simple projects may be available to make during our tour.

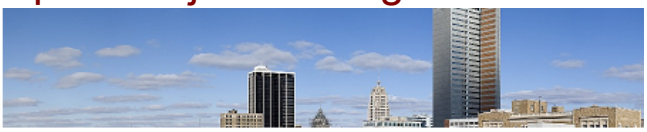
Most of TekVenture is intended for all ages. Expansions include theater,

woodworking, and an active Fort Wayne Inventors Club. The FW Inventors Club is also potentially helpful if interested in patent law.

PLEASE MONITOR FUTURE NEWSLETTERS FOR REQUIRED CLOTHING AND OTHER DETAILS.

Northeast Indiana Chapter Project Management Institute

NEIC PMI NORTHEAST INDIANA CHAPTER



Managing Like a Prince: What Machiavelli Teaches Us about Project Leadership

Dr. Steve Walter

“A wise man ought always to follow the paths beaten by great men, and to imitate those who have been supreme, so that if his ability does not equal theirs, at least it will savour of it.” – Chapt. VI. The Prince, Niccoló Machiavelli, 1532

Niccoló Machiavelli wrote *The Prince* to document his theories on leadership, power, and influence. In *The Prince*, he dispenses advice on how to lead and manage people, build organizations, handle finances, manage risk, resolve conflicts, and achieve objectives. Machiavelli’s analyses are rich and nuanced; giving voice to the need to manage in a manner that, at times, will challenge one’s principles. He affirmed the reality of having to face “agonizing choices between incompatible

alternatives." Machiavelli's pragmatic approach to leadership and exercising power is the reason why *The Prince* finds its way onto numerous project management reading lists.
This lecture should provide a provocative and entertaining voyage back to the Renaissance, offering opportunities for thoughtful reflections about the challenges we face in today's workplace.

Bio
Dr. Steve Walter is the founder of Systems Impact LLC, a firm specializing in systems engineering and project management consulting and training. Dr. Walter's work is informed by more than two decades of experience in systems engineering, project and program management, and higher education. Before starting his consulting business, he was the Distinguished Professor of Systems Engineering at Indiana University–Purdue University Fort Wayne (IPFW). Prior to that, he held a variety of systems engineering and program management roles at Northrop Grumman Space Systems Division and NASA's Jet Propulsion Laboratory (JPL).

Dr. Walter earned his Bachelors of Science degree in Physics from the University of Maryland and his Masters and Doctorate in Physics at the University of Colorado at Boulder. He holds both the Expert System Engineering Professional (ESEP) and Project Management Professional (PMP) certifications. Dr. Walter is a member of the International Council on Systems Engineering (INCOSE) and Project Management Institute (PMI), and a senior member of the Institute of Electrical & Electronics Engineers (IEEE).

Date: Wednesday, January 30th, 2019
RSVP Deadline: Sunday, January 27th, 2018
Location: Don Hall's GuestHouse**,** 1313 W Washington Center Rd, Fort Wayne, IN 46825

5:30 PM – Networking/Social
6:00 PM – Dinner
6:45 PM – Announcements
7:00 PM – Presentation
8:00 PM - Adjourn

- NEIC chapter members: dinner and speaker - $20
- In Jobs-Transition or Student Membership - $10
- Non-members: Dinner and speaker - $30
- Speaker Only: $0 (Members), $10 (Non-Members)
- Pay now with credit card only; pay at door option is no longer available

Register Now

FY19 FWEC Board Opening

The FWEC is looking for a Vice-President for the FY19 (2018-2019). Board positions are crucial to the planning of tours and events for the FWEC. Please consult the FWEC constitution or contact us at info@fortwayneengineersclub.org for information on specific duties on board positions.

FWEC roster for FY2018-2019

Proposed FWEC roster for FY 2018-2019:
President: John Magsam
Vice President: Open and under discussion; comments and suggestions welcome.
Treasurer: Ryan Stark.
Treasurer Trainee: Volunteer needed.
Secretary: Marna Renteria.
First-year Board Members: Rob Cisz. Another volunteer needed.
Second-year Board Member: Dave Gordon. Morgan Miller.
Third-year Board Member: Rod Vargo. Craig Welch.
Editor of Engineer News: Maruf Ahmad.
Membership and Contact Chair: Dave Schaller.
Northeast Indiana DiscoverE Chair: Rob Cisz.

Sincere thanks to outgoing Officers and Board Members: Bharat Rajghatta, Elizabeth Garr, Ellsworth Smith, and Jon Cook.

PLEASE CONSIDER STEPPING UP INTO ONE OF THE OPEN POSITIONS. Most require
very little time. The economy is booming, so tasks are being distributed across more people. The outgoing individuals are experiencing increased demands
outside FWEC. Historically, Board Member ages range from high school through retirement. Participation tends to return more than it takes.

FWEC Board Meetings

Fort Wayne Engineers' Club board meetings are open to all FWEC members. The next FWEC board meeting will be on Tuesday, February 5th at 7:00 PM. Board meetings are held on the Indiana Tech campus in the Academic Center in room ACC-201.

Advertise in the Engineers' News

The FWEC provides advertising space within the Engineers' News. Advertisements are $10 per issue and limited to ½ page of content. For submissions please contact info@fortwayneengineersclub.org.
