Roofing Technology Think Tank (RT3) Brings Industry Together with Accelerated Needs for Technology

By Heidi J. Ellsworth and Karen L. Edwards

Figure 1 – Some of the RT3 members who attended a meetup at Microsoft offices gather for a photo at the sign in front of the Microsoft Visitor Center in Redmond, WA.

In 2017, a group of roofing industry professionals came together to talk about technology in roofing. The individuals, including members of National Roofing Partners (NRP) and RoofersCoffeeShop®, met that July at BuiltWorlds in Chicago, a network and community focused on technology and innovation in construction. They quickly saw the need for an organization that could focus on technology solutions for the roofing industry, calling it the Roofing Technology Think Tank (RT3). National Roofing Partners stepped in to fund a staff position for six months while the group determined whether the organization would be viable and sustainable.

The growing interest in the organization and its activities showed that formalizing the group as an association was the next step. Founding member Trent Cotney of Cotney Construction Law donated his firm's services to help RT3 become a 501(c)(6) nonprofit business association.

MEETUPS – LIVE AND VIRTUAL

A live meetup was organized for that fall at Georgia Tech, hosted by Pointivo and Estimating Edge, with 20 in attendance. Members toured the university's 3-D printing lab, followed by a tour of Pointivo's offices in the startup incubator facility on campus. They held breakouts to brainstorm ideas on how what they learned could be implemented in the roofing industry.

The interest level was solid among the attendees, and a collaboration was born between Pointivo and Steve Little of KPost Roofing & Waterproofing and NRP that resulted in a remote inspection tool being developed and brought to market this year, which will be detailed later in this article.

In between live meetups, RT3 members participate in virtual meetups approximately three times per year. These are one-hour online sessions that allow the members to stay connected, conduct association business, and learn from a 15-minute Tech Talk.

Members held their next live meetup at Capitol Hill in conjunction with the first Roofing Day in D.C. event in 2018, with presentations from U.S. Representative John Delaney and Brookings Institute's Dr. Nicol Turner-Lee, a fellow in the Governance Studies Program for the Center for Technology Innovation.

Thinking big, RT3's meetups task team, led by co-author Heidi Ellsworth of RoofersCoffeeShop and HJE Consulting Group, decided they wanted to take the group to Microsoft. With the help of member Ken Kelly of Kelly Roofing, who was a 2015 Microsoft Visionary Award winner, RT3 held a meetup in the fall of 2018 at Microsoft's Innovation Lab in Redmond, WA (*Figure 1*). Members were excited about the future technologies and brainstormed ways in which what they learned could help in the roofing industry. (See *Figure 2*.)

In the spring of 2019, OMG Roofing Products hosted RT3 members at their facility in Agawam, MA, and they were

introduced to the research and development process and toured the manufacturing facility, where they saw robotics in action.

It was here that, while in breakout groups, the group developed their purpose statement: "RT3 thought leaders improve lives by discovering and leveraging technology accelerators to make our industry and roofscapes stronger."

3M's World of Innovation was the next stop for the RT3 members. They toured the visitor center and heard presentations from 3M team members (*Figure 3*). A brainstorming session generated pages of ideas for ways that some of 3M's innovations could possibly be adapted for use in the roofing industry. The meetup ended with a visit to the roofing granule lab where members were able to see how shingle color blends are developed.

During the International Roofing Expo in Dallas, TX, RT3 held a meetup at member KPost Roofing & Waterproofing's headquarters to tour the facility, learn about the technologies they employ to run their business, and see a demonstration of the technologies they use during installation of roofing systems.

TECHNOLOGY ON THE ROOF

KPost Roofing & Waterproofing has been an early adopter and pioneer in the use of technology on the roof. While searching for ways to reduce the need for labor and increase quality and speed, they discovered the Mini-Macaden®, a tool that was primarily being used in Europe and Canada that can install modified-bitumen roofing membranes in a way similar to how a paver applies asphalt to a road. The machine is manufactured by SOPREMA®.

Steve Little, head coach at KPost, reported that his crews on a large data center job were installing 14 to 15 rolls per hour, and they achieved a 40 percent labor savings by reducing the number of crew members needed from ten to just six by using the tool. "Completing our projects much faster allows us to move our crews to the next job quicker, maximizing our revenue potential during the construction season," says Little.

Little was in attendance at the November 2017 Georgia Tech meetup where he met Pointivo's Bill Wilkins. While there, Wilkins demonstrated how his company uses a proprietary artificial intelligence (AI) and computer vision platform to analyze images, providing a deep understanding of the physical properties of the image. Little wondered if it would be possible to analyze aerial images of a roof to perform virtual roof inspections.

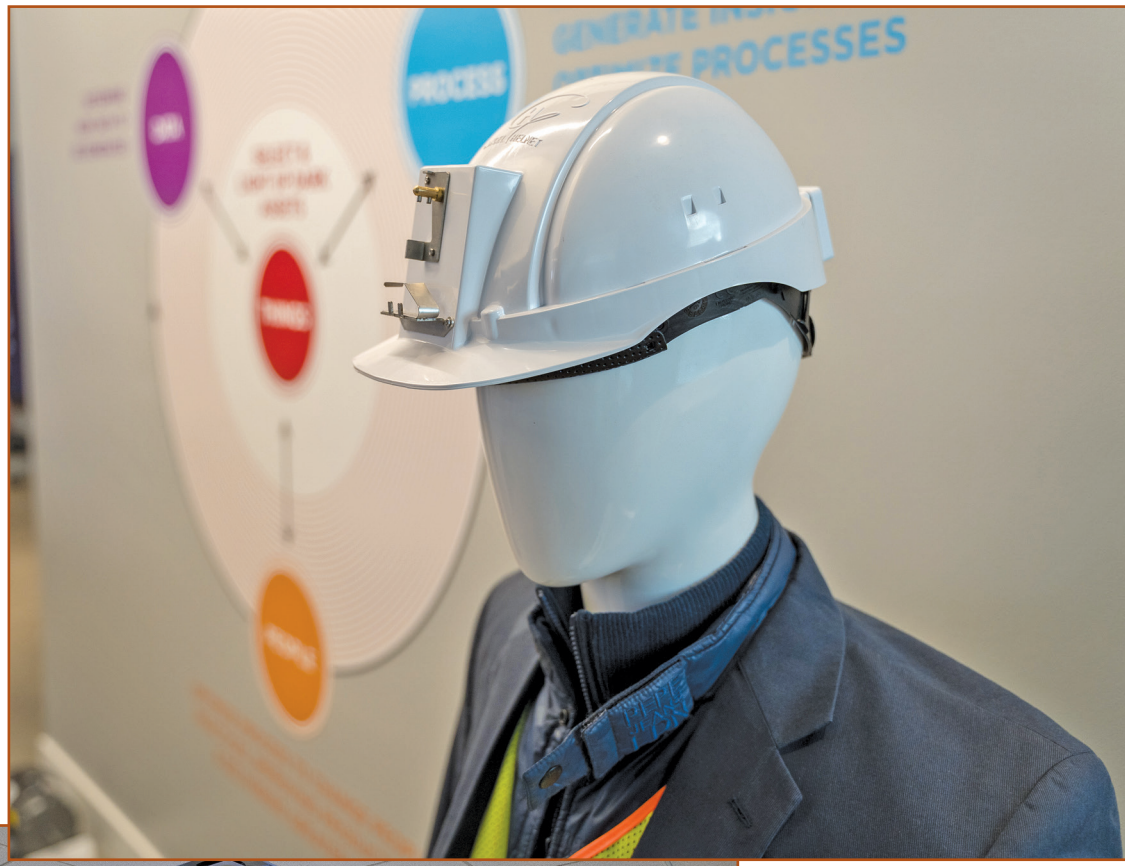

Figure 2 – A hard hat equipped with technology to monitor impacts and worker vital signs was one of the items being developed in the Microsoft Innovation Lab.

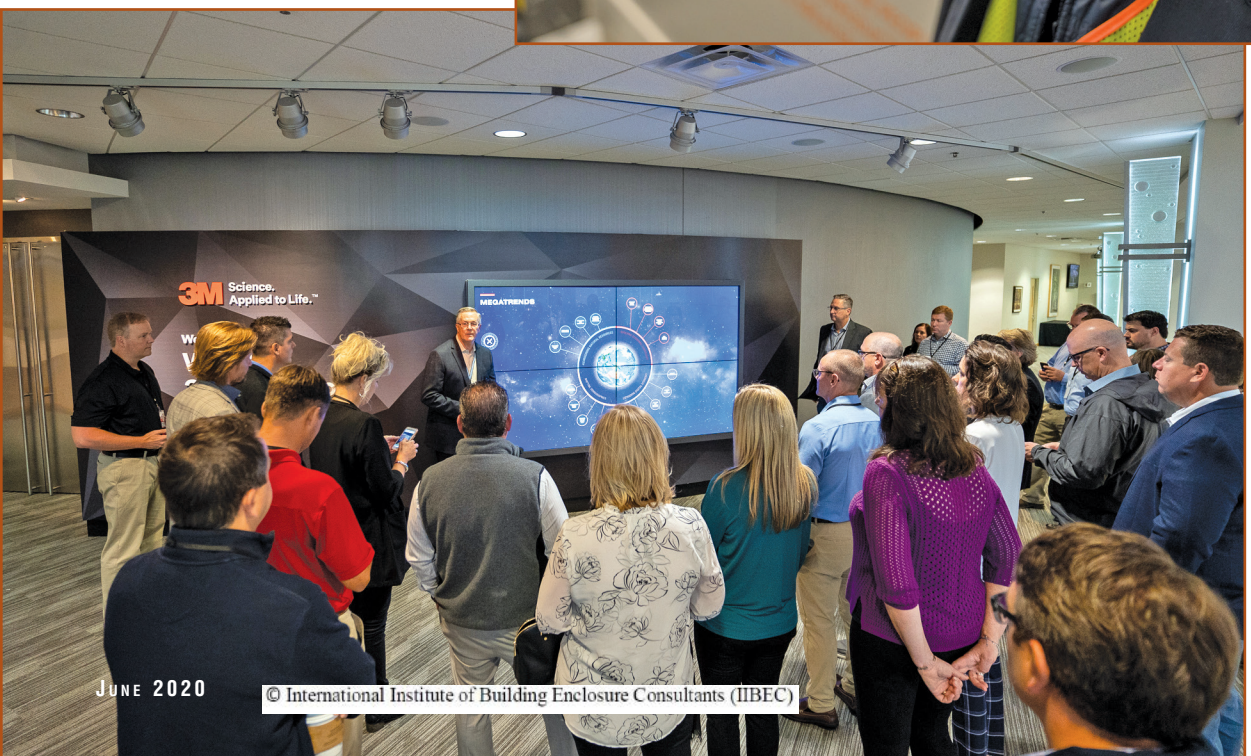

Figure 3 – RT3 members begin their tour of the 3M World of Innovation by learning how the company watches and identifies megatrends.

Just 18 months later, Wilkins, Little, and Deryl Kratzer of NRP developed a tool that can examine roof images captured by a drone and identify problem areas that need to be addressed. It also identifies measurements of roofs and walls, drains, HVAC units, and other penetrations. The end user has the ability to make a correction if something is incorrectly identified. This technology saves 80% of the time a contractor spends on the roof and at their computer. The AI in the platform learns from the corrections to become even more accurate in the future.

A nationwide network of drone operators is on standby, ready to fly and capture images of any building in the U.S. The technology allows contractors to remotely inspect a roof, mapping it and identifying areas of concern with accurate detail that can be shared with the owner.

TECHNOLOGY AND THE WORKFORCE

RT3 member and inaugural Innovator of the Year Award winner Rackley Roofing (*Figure 4*), headquartered in the Nashville, TN, area, has implemented a lot of technology into their operations—so much so that the company was able to go entirely virtual when the business closure and shelter-in-place orders were issued due to the COVID-19 pandemic.

Rackley Roofing is using virtual reality (VR) as a safety training tool for employees and found the added benefit that it attracts the interest of the younger generation—a powerful tool for recruiting. Company COO Michelle Boykin says, "We were at a career fair for youth, and the booths beside us said they were happy we had our VR gear there because they were able to talk with all the people waiting in line to try it out."

Rackley Roofing uses the VR headset to allow employees to select safety gear for a virtual coworker and watch as that worker "falls" to see if they selected the right personal protective equipment to save their life. It is a great tool to allow employees to be on a roof virtually before setting foot on one for the first time.

The company's communications have also been enhanced by technology through the use of the WT2 Translator, which employs an app and a set of earbuds that instantly translates speech into 40 languages with 93 different dialects. With roofing crews speaking multiple languages, Boykin says that it's made it much easier to communicate.

RT3 member Ken Kelly is looking into ways that his younger, less-experienced workers can benefit from seasoned professionals by using Microsoft's Hololens in the field. Hololens is described by Microsoft as "the culmination of breakthroughs in hardware design, AI, and mixed reality development."

Imagine a scenario where a worker in the field requires assistance in diagnosing or repairing a problem on the roof, but the employee doesn't have the experience to handle the situation. That worker can put on the Hololens and contact a more seasoned worker who may be in the office or on another job. The image being examined by the field worker through the Hololens can then be viewed by the more experienced professional to see what the worker on the roof is seeing in real time. They can then diagnose the issue and provide instructions for repair.

In addition to the use of virtual reality for safety training, contractors are turning more to safety apps that can provide safety talks, as well as the required Occupational Safety and Health Administration (OSHA) documentation that affirms the training has been completed. RT3 member Harness provides this app to contractors in any trade who are required to log and monitor their safety training. They even released a free version in March 2020 that was developed specifically for COVID-19 Toolbox Talks.

TECHNOLOGY TO WORK REMOTELY

Many of us are working remotely now—often as a result of the COVID-19 pandemic—but for an industry that isn't used to doing this, it can be challenging. As mentioned previously, Rackley Roofing went 100 percent virtual in March. Boykin explained in a recent RT3 special webinar that not much has changed for their field employees, who are used to using the Dataforma app and the About Time time-tracker software.

"Our office staff was prepared for this, because with multiple offices across the state of Tennessee, we are used to conducting virtual meetings," Boykin says. "Most of the software that we use is web-based, and with Dataforma, they have an audit log that allows us to see what employees are doing in the system."

Boykin said that the first full week of being virtual went fairly smoothly and that it has been an indicator of which team members are on board with technology. They work one-on-one with those who need help. The company relies on Slack for communications and Zoom for meetings. She reports that Rackley Roofing is careful to take security precautions and update their software frequently for fixes being offered by the Zoom platform.

Contractors who previously were not working in the cloud were forced to scramble to try to make that transition at the beginning of the coronavirus breakout. This situation has forced the roofing industry to push ahead five years in a matter of a few weeks. One of RT3's goals is education, and the think tank has held panel discussions

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at industry trade shows over the last two years.

When businesses were shuttered and people cautioned to stay at home due to the coronavirus pandemic, the RT3 board members knew that the industry would need a place to come together. A special webinar was pulled together in a matter of two days, and the industry was called on to help get the word out. More than 500 people registered, and nearly 400 attended.

The webinar provided a platform for everyone to come together where they could hear from legal expert Trent Cotney, residential and commercial roofing contractors Ken Kelly and Steve Little, marketing expert Anna Anderson, and sales expert Ryan Groth, who all shared tips for operating businesses virtually and using shared resources—including communications plans, company COVID-19 plans, employee communication documents, and more. Feedback was so great and there was such a need that the webinars will continue until no longer needed.

Figure 4 – The first Innovator of the Year award was presented by RT3 at the 2019 Best of Success Conference in Miami. Left to right: Jill Bloom, publisher of Roofing Contractor *magazine; Michelle Boykin, COO of Rackley Roofing; Curtis Sutton, president of Rackley Roofing; and RT3 Award task team members Anna Anderson, CEO of Art Unlimited; and Charles Antis, CEO of Antis Roofing and Waterproofing.*

INDUSTRY COLLABORATION AND COMMUNICATION

Feedback from the industry also confirms the need for an organization like RT3. Although the think tank concept is new to the industry, the resulting collaborations are making a real difference for all roofing professionals. Contractors from across the country are embracing technology and joining service providers, media, distributors, and manufacturers in curating and distributing technological information.

Roofing professionals are looking to understand how technology can help them and what questions they should be asking. The software stack and cloud-based solutions that have been discussed during several panels with RT3 contractors are a prime example. Roofing professionals want software that is open-ended and can integrate with other software platforms. It allows contractors and consultants to work together with the ability for safe and efficient data sharing.

One such collaboration is the ongoing need for strong communications between roofing contractors and roof consultants. Just as roofing contractors are stepping into the technology world, they will be joining many progressive roof consultant companies that are already using technology. Bluefin, LLC and DeSimone Consulting Engineers are two roof consultant groups that have joined RT3 in order to learn more about the use of technology on the roof and creating strong roofing contractor collaboration.

RT3 members sign nondisclosure agreements (NDAs) that allow them to speak freely about ideas, technology collaborations, and future thought leadership that will help the industry. Companies like Estimating Edge are working with other software companies to promote the use of open application programming interfaces (APIs) that will help roofing professionals connect different software stacks within and outside their companies. There is a strong need for the ability to leave double entry behind and create two-way data flows that help the contractors communicate with other roofing professionals, including roof consultants and distribution and service providers. This type of technology connection will also help with labor shortages and employee retention, creating a culture of technology that will attract the next generation to the roofing industry.

Now with COVID-19, there is a renewed need for technology that is all about communication. Distribution members of RT3, such as Beacon Building Products, are working with contractors on utilizing online ordering, delivery tracking, and cloud-based sales tools to help keep roofing contractors roofing. During live and virtual meetings, part of the "think tank" mission is to talk about what is needed and how it can be incorporated. Often RT3 is simply bringing technology into roofing that is already a part of our everyday lives.

One example is Zoom. Ryan Groth of Sales Transformation Group has used Zoom virtual meetings for his weekly sales training meetings for a couple of years. "It is a tool that is used in the greater business world, but the roofing industry is just beginning to adopt it," stated Groth. "Online communication tools will continue to expand with new platforms like Slack, which RT3 members use, as well as the new Microsoft Teams, which is part of Office 365. As technology companies continue to create easier-to-use communication platforms, we plan on bringing them to the industry."

Remote imagery and associated software and apps that were unheard of in the mid-2000s are now helping lead the way as the need for remote selling, communications, and notifications grows. Companies within RT3 are learning from technology providers like Microsoft about new AI technology that is going to allow roofing professionals to utilize aerial imagery in conjunction with machine learning to continually assess damage on the roof virtually. Of course, it is understood by all that boots on the roof will always be necessary; but time on the roof will continue to diminish with the use of imagery and AI advances.

ONLINE LEARNING

What has really surged during this time of sheltering in and economic uncertainty is the need to continually keep learning. Online learning is not only happening for the youth of our country but for all professionals. RT3 and its members have all stepped up with webinars, forums, podcasts, town halls, and constant online communications concerning COVID-19. For contractors and consultants, this is an excellent time to share digital learning with each other.

The International Institute of Building Enclosure Consultants (IIBEC) has shared a full course of online learning that has also been promoted by RT3 member RoofersCoffeeShop and other industry media, showing an ongoing trend of collaboration.

The National Roofing Contractors Association (NRCA), which is also an RT3 member, has been publishing ongoing information that is being shared by RT3 and its members. Utilizing video, town hall formats, and articles, NRCA's CEO Reid Ribble has taken his normal in-person speaking schedule and transitioned it online with NRCA Town Hall and interviews with industry media, including RT3 member *Roofing Contractor* magazine.

The key to these changes is the roofing consulting community being a part of the technology conversation. "This type of education, collaboration, and information is critical to our success as a company and the future of the roofing industry," stated Giulia Alimonti of DeSimone Consulting Engineers.

Alimonti recently joined RT3 and plans on being very active. Living and working in New York recently has opened her eyes even further to the need for strong technology communication options—whether it is virtual online or as everyday as FaceTiming or texting customers to make sure there is a strong connection and ongoing engagement. "I am using technology in everything I do," noted Alimonti. "I want to be on the front line of what is happening with technology in the overall roofing industry, with building owners, and understanding the roofing contracting community."

RT3 encourages roof consultants to become a part of the RT3 community by following the organization on social media outlets and subscribing to the RT3 SmartBrief. All past and future live and virtual meet-ups are hosted on the RT3 website, www.rt3thinktank.com, along with ongoing blogs and information for future education. IIBEC

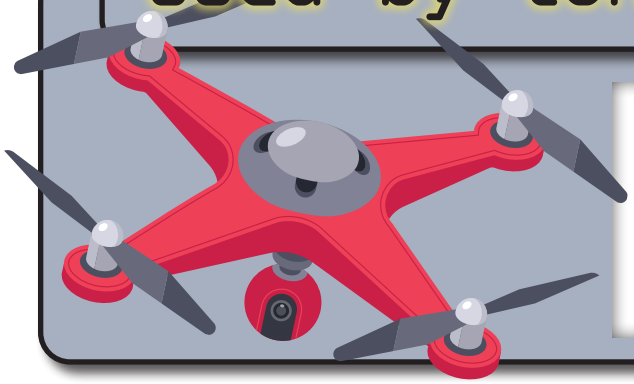
Heidi J. Ellsworth

Heidi J. Ellsworth is a partner with RoofersCoffeeShop® (RCS), owner of HJE Consulting, and founder of Roofing Technology Think Tank (RT3), for which she currently serves as president. Ellsworth is the founder of National Women in Roofing (NWIR) and continues to support its board. She routinely writes for the RCS digital community and contributes to Professional Roofing, Florida Roofing Magazine, Carolinas Contact, Western Roofing, *and* Siding & Insulation Magazine, *along with ongoing freelance writing for the construction industry.*

Karen L. Edwards

Karen L. Edwards has been a marketing professional for 30 years, focusing the past 20 years on the roofing industry. Having worked at both Carlisle Syntec and EagleView, she has led prominent industry marketing and contractor marketing programs. Edwards now owns her own consulting business, Casimir Group, where she serves as the editor for RoofersCoffeeShop®. She is a director of the Roofing Technology Think Tank (RT3) and supports contractors and manufacturers in their marketing efforts.

Technology Tools Used by Contractors



In a recent survey of construction contractors by the Associated General Contractors of America (AGC), 32% of firms reported using labor-saving equipment such as drones and GPS-guided equipment, while 28% used methods such as building information modeling (BIM), lean construction, and offsite fabrication to reduce onsite work time.