Technology is changing the way we deliver architecture...
Hello fellow League members and welcome to the second quarter of 2019. The year is off to a good start. In late December, we submitted our paperwork to AIA National for core member services. For those of you who are not familiar with this initiative, it is an effort to ensure that all AIA components are providing required services to all our members. We held our Installation Dinner on January 12; many thanks to Tom Haggerty, for organizing the event, and to Verity Frizzell, FAIA, Past President of AIA-NJ, for presiding over the installation. Congratulations to Vegliante Award winner, Steven Lazarus and Trustee Award winners, Ruth Bussacco, Kurt Vierheilig and Steven Zmuda. Rounding out the quarter, we also held our February and March monthly programs.

Also, in early March I attended Grassroots, held in Washington DC, along with Ryan Moran as part of a contingent from New Jersey that totaled 25 people. It was great to see so many active and engaged members from our state. Grassroots included a Capitol Hill Day, during which we visited the offices of our New Jersey senators and congresspeople in order to advocate for two issues that are of great importance to the architectural community: tax incentives for energy efficiency measures installed in buildings; and funding for a federal clearinghouse of resources on school design best practices. Please see page 9 for additional information on this event.

We are also hard at work on the events that will fill out the rest of our calendar this year. In addition to our regular events and tours, we are creating local programs that share the spirit of and build on AIA State or National counterparts, including:

- Government Advocacy
- Sustainable / Energy Efficient Design
- Mentoring

Why should we be acting at the local level when these programs already exist at the state and national levels? To paraphrase the environmental movement, “think globally, act locally.” Action at the local level provides us with the greatest opportunity to be involved in ways that both feel meaningful and provide the foundation for larger action up the chain to the State and National levels. The AIA is meant to be a bottom-up organization; involvement and interest at the local level is meant to trickle up and inform work at the state and national levels.

Together, we can greatly enhance the value that the AIA, and the League in particular, provides to us; all we need to do is join together and form our communities. I do look forward to hearing from you regarding the communities of interest that you are interested in creating and participating in at our local level.

In the meantime, please enjoy this issue of our Leagueline. Editor Eric Lam has put in a lot of effort to make sure we are all informed about the latest technology and how best to put it to use in our practices. I hope to see you at all of our great events this year.

Todd M. Hause, AIA
ALNNJ President 2019

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Cover project photos:
LAN Associates, Arcari + Iovino Architects
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Since the Renaissance, architects learned to use three-dimensional drawing technique to communicate with patrons.

Since the Renaissance, architects have learned to use three-dimensional drawing techniques to communicate with patrons. With perspective views, what the architect wants the client to see is easily understood, to some degree. The vignettes, while enough to provide the client with a striking sense of what the design is about, still fall short in telling the whole story. Walkthrough video and animation was a breakthrough a decade or so ago, and was a precursor of VR, which gives architects the ability to convey the design with more clarity. Unfortunately, there is still a limitation to showing the design in a manner which can bridge the expectation between architects and clients.

Immersive experience using a handset and even a smartphone finally gets architects closer to how they want the client to experience spaces. While early adaptations of VR have generally been limited to large firms such as HOK, Perkins & Will and the like (they even developed their own app) the maturity of mobile technology and cloud computing levels the field for mid-size to even smaller firms. Firms like LAN Associates, profiled in the case study that follows, have used VR and that ability is already built into BIM software plus cloud computing.
Beyond presentation, VR is giving architects the ability to collaborate internally with the project team, including consultants and vendors like never before. Every member of the design team can walk through a space to really understand the design before details are drawn, reducing the amount of time it takes to coordinate. This will also allow team members to ask questions or start a dialogue on problematic issues earlier in the process. In the construction site, VR allows the design team and the construction team to communicate not just the design intent but also the sequence of work using a 4D program.

Beyond VR, Augmented Reality (AR) and Mixed Reality (MR) are slowly gaining the attention of the design industry. Augmented reality is taking the real environment and enhancing it with digital content. For example, with a smartphone camera, users can point it toward an environment, be it an interior or on the street. Digital content such as a piece of furniture or the entire building is superimposed over the environment allowing the viewer to experience the “what-if” scenario not strictly in an artificial environment. As with VR, AR has been adopted by some of the largest firms in the country.

At this time, MR is still in its infancy. According to Julia Tokareva, a Software Development Consultant at RubyGarage, “Mixed reality that starts with the real world – virtual objects are not just overlaid on the real world but can interact with it. In this case, a user remains in the real-world environment while digital content is added to it; moreover, a user can interact with virtual objects. This form of mixed reality can be considered an advanced form of AR.” Whereas, “Mixed reality that starts with the virtual world – the digital environment is anchored to and replaces the real world. In this case, a user is fully immersed in the virtual environment while the real world is blocked out. Sounds like virtual reality, right? In fact, it does, but the digital objects overlap the real ones whereas in conventional VR the virtual environment isn’t connected to the real world around a user.” Simply put, in the first scenario, objects appear as holograms within the viewer’s environment and the viewer can interact with the object.

Totally different from the three different “reality” technologies above, 3D printing allows us to generate a physical object that can be examined and interacted with, without the use of technology. Also known as additive manufacturing, 3D printing dates back to 1983 when Chuck Hull, an engineer and founder of 3D Systems, invented Stereolithography (SLA). Other forms of 3D printing process are Fused Deposition Modeling (FDM) and Selective Laser Sintering (SLS). Though it varies on resolution, accuracy, and the type of materials that can be used with these different printing processes, all of the 3D printers using any one of the processes can produce architectural study models. The way 3D printing works is not much different than a desktop inkjet printer except the material to produce the object is extruded from a print head layer by layer, hence additive manufacturing.

Beyond architectural model making, this technology has already proved to be beneficial in the design process. Quick and efficient production of concept models allows us to show clients the iterations of a design in a much shorter timeframe than previously possible. However, this technology also went beyond client presentation, architect can produce full scale prototype of building parts. Since 2015, Chattanooga, TN-based architect, Platt Boyd, AIA, has created a startup, Branch Technology, to further utilize and push the potential of what 3D printing can do. The first 3D printed part Branch Technology created was an open matrix lattice printed with carbon-fiber reinforced ABS plastic with the use of a robotic arm. It was conceived to be the core and formwork of a modular wall system. Today, the firm has produced a structure from movable interior partition to an entire outdoor pavilion.

Around 2008, researchers at the University of Southern California developed contour crafting capable of printing a large structure as big as a house with quick set concrete. By 2015, New Story, a San Francisco-based nonprofit company co-founded by Brett Hagler that also serves as the CEO, partnered with ICON, a construction technologies company, is developing a 3D Home Printer that can print a home for less than $4000 within 24 hours. While New Story has since completed close to 1,000 homes using conventional methods in places where adequate shelter is out of
reach, places such as Bolivia, El Salvador, Haiti and Mexico, they believe the 3D printer will deliver these homes with a more efficient timeframe and budget. In March 2018, this partnership produced the first permitted 3D printed home in Austin, TX using the prototype printer.

Technology clearly provides the architecture industry with better tools to communicate not just with people who seek our services but also those who work with us. In the not too distant future, Virtual Reality is going to let us experience spaces so real that it will engage almost all of our senses. The simulation of sound, smell, and the feel of objects in the virtual world may take our presentations to a level unimaginable now. There exists a possibility of a permitting process which allows us to walk through the project with planning and zoning board officials to get a project approved. Augmented Reality and Mixed Reality will further change the way we work with our colleagues. We are going to be able to design an entire project within the confines of a virtual world with the ability to manipulate virtual objects probably right at the job site.

When the project has gone through virtual review and is validated by every stakeholder, 3D printing will give us the opportunity to become makers. Printing objects designed by architects, from as small as a park bench to as large as a modular wall panel, using cutting-edge environmentally sound media, will become the norm. We will be able to quickly fabricate parts using biodegradable materials for the purpose of studying and further validating how building components that are designed digitally can actually be joined together, enabling us to evaluate its aesthetic by holding it in our hand, within a matter of minutes. Someday, perhaps an entire high-rise can be built with robotic-assisted printers at a fraction of the current cost and time.

Sources:
Wallis, Stephen, “3D Printed Houses Are Here and in High Demand”, Architectural Digest, September 26, 2018
Flyet, Joseph, “A Detailed History of 3D Printing”, www.3dinsider.com

WARES FOR VIRTUAL REALITY

For architecture firms that have yet to get into using Virtual Reality, there are a lot of decisions to be made in terms of hardware and software selections. Since these technologies have been in the market for quite some time, there are now many vendors offering a plethora of products that cater to both hobbyists and professionals, how and what you need could lead to decision fatigue. To determine what is best for your practice, you will need to understand your budget, the desired presentation quality you are looking for, and how much time you have to gain this new skill set.

Hardware
The most basic piece of hardware to start is a workstation. This is where the decision on how much money and time you want to invest becomes critical. If you want to just dip your toe in the water, a basic workstation that fits the minimum requirements of any BIM software will do. From there, your model can be cloud-based apps. Apps such as Revit Live, Kubity, and InstaVR, as well as just a few of the many others, offer a free trial. That’s basically all you need to do to get a rendered VR environment that you can share with your client on their smartphone or tablet. To provide an immersive experience, you can purchase a Google Cardboard headset and send it to your client if they don’t already own a headset. The learning curve is close to none as much of the process is done through cloud computing. Quality, however, depends on the app and the viewing device.

For a more elaborate setup and higher quality VR experience, consider purchasing a dedicated workstation that is fitted with a graphic processing unit (GPU) or simply a graphic card that meets the resolution requirement of the Head Mounted Display (HMD) with the ability to produce high frame rates for playback. A simple gaming desktop can be had for as little as $800 but a high-end system such as the HP Omen x Compact Desktop and VR backpack can cost as much as $2,500. On the other hand, if you have a decent workstation that you would like to repurpose, you can simply purchase a GPU that meets the headset requirement. A gaming GPU is around $300, and a professional one can cost as much as $1,800. In addition, you will need an HMD such as an Oculus Rift or one that can accommodate a smartphone such as Google Daydream View. The cost of this unit runs between $100 to $300.

Software
In addition to the hardware above, software is needed to convert the model into the VR environment. Depending on whether your workstation runs on the iOS or Windows platform, installing the appropriate software is important to produce a VR environment in the desired quality. Some of this software originally catered to the gaming industry but has since branched into producing VR for our industry. Twinmotion, Unity3D, and Unreal Engine are some of the most popular choices among firms that have adopted VR in their workflow. Like cloud-based apps, many of the software offers free trials as well as tutorials.
With close to 700 students enrolled from ninth to twelfth grade, most of whom reside in the Borough of Leonia, Leonia High School completed a building expansion on the north side of the original structure in 2018. Part of this expansion includes a state-of-the-art culinary lab, among other much needed spaces. The Board of Education engaged LAN Associates, a Midland, NJ-based multidiscipline firm, to design the expansion, which cost an estimated $5 million.

According to Matthew Fink, an Associate of the firm and Project Architect, “our client asked if we could create a culinary lab that rivals the Iron Chef kitchen.” The team wanted to acknowledge to the client that they too shared the same vision, so they decided using Virtual Reality to present the design concept would be the best way to achieve this initiative.

To prepare for the presentation, the team built the model in Revit, a BIM program by Autodesk. Scenes were then created to capture different views of the space. When material and lighting data were applied to the model, it was then uploaded to Enscape (https://enscape3D.com). Harnessing the cloud-based rendering ability of Enscape, the model quickly turned into an immersive experience allowing the viewer to explore the space with minimal effort. According to Enscape, it creates real-time rendering and virtual reality in a matter of minutes without in-depth knowledge of the software. Despite the fact that there is a bit more work to prepare the model, “the integration of virtual reality scenes was seamless and efficient,” Fink said.

During the presentation, which took place in a conference room at the office of the Board of Education, the school’s superintendent, principal, teachers and business administrator viewed the presentation with a headset distributed by LAN. While the project encompassed other areas, the presentation focused only on the culinary lab to keep viewers from wandering too far or becoming disoriented. Compared to other projects using traditional presentation methods, the clients were able to reach consensus faster than usual. Amazingly, the entire presentation from production to showing went on without a single technical glitch.

The decision to adopt VR into the workflow did not just benefit from a better decision-making process with the client at the early stage of the design, it also benefited the project team during the Construction Documentation phase. Technology such as BIM and VR, as Fink surmised, “helps us detect clashes in structures and systems early in the process as well as areas that need extra attention or detailing. It can add more work as we see various areas in a way we never have but it also simplifies construction and avoids conflicts”. Ultimately, by bringing the project into the VR environment, the project team successfully completed the space and the clients were happy to have some proud end users.
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The Architects League is pleased to announce that ALNNJ and AIA-NJ Past President Martin Santini, FAIA, has been selected by the Chancellor of the AIA College of Fellows to be the COF Regional Representative for AIA-NJ for the next 3 years.

As a COF Regional Representative, Santini will be a liaison between the AIA Fellows in our region and the AIA College of Fellows, connecting our region with the others across the country to promote the objectives of the COF and to generate awareness of the benefits of becoming a Fellow. Santini’s role will be to encourage participation and giving among existing Fellows, and to inspire professional growth for the members considering advancement.

Santini, along with John Hatch, FAIA, who is also an AIA-NJ COF Representative, will be attending upcoming state and section scheduled events to briefly address members concerns about the application and nomination process for advancement to the College of Fellows. Watch for future announcements throughout 2019.

Grassroots, the national yearly Leadership and Advocacy Convention returned to Washington DC this year, running from March 6 to 8. The theme was “People, Purpose, Partnership” and stressed the role of the architect as a citizen, one who will advocate for the important issues affecting our society. Key issues discussed in seminars and roundtables this year included equity, advocacy and sustainability.

The program included a Capitol Hill Day, during which teams of architects visited their senators and congresspeople to advocate for two issues. First was a request for funding for tax incentives for energy efficiency improvements for existing buildings. This would be accomplished through changes to section 179D of the tax code, which although not currently funded, is structured to provide tax incentives for energy efficiency in new construction. Second was a request for “Safe Schools by Design” through the creation of a national clearinghouse of best design practices to create schools that are safe and remain positive, healthy learning environments. Schools would then have a reliable source of information at their disposal when planning work for new or existing schools.

AIA-NJ Past President, Verity Frizzell, FAIA is a candidate for National At-Large Director, and gave a wonderful speech. Let’s support Verity in her efforts to create a strong, vibrant AIA.

Todd Hause and Ryan Moran represented the League at this exciting and important event.
2019 INSTALLATION DINNER

On January 12, the annual AIA Architects League of Northern New Jersey was held at The Brick House in Wyckoff, celebrating outgoing President Joseph E. David, AIA, incoming President Todd M. Hause, AIA, and the 2019 Board of Trustees. The incoming Board was sworn in by outgoing AIA-NJ President Verity Frizzell, FAIA.

Honored with Trustees Awards were Ruth A. Bus- sacco, AIA; Kurt Vierheilig, AIA; and Steven Zmuda, AIA for their many years of dedicated service to the League. Receiving the Anton L. Vegliante Memorial Award, the League’s highest honor, was Steven B. Lazarus, AIA.

Music and dancing followed, with entertainment once again provided by Moxie! Special thanks goes to Matt Fink, AIA, for graphic design of the evening’s program, and to Past President, Tom Haggerty, AIA for organizing the event.

Arthur L. Davis Lecture

Postponed due to a snowstorm on its originally scheduled date, the ALNNJ Arthur L. Davis Lecture was held December 18, 2018 at Montclair State University. David Benjamin, Founding Principal of The Living and Assistant Professor at Columbia GSAPP, presented recent projects that included the Princeton University Embodied Computation Lab (a new building for research on robotics and IoT), Pier 36 EcoPark (a 200-foot-long floating pier in the East River that changes color according to water quality), and Hy-Fi (a branching tower for MoMA PS1 made of a new type of biodegradable brick). These works focus on expanding the definition of environmental sustainability through the frameworks of biology, computation, and a circular economy. Recently, Benjamin appeared in Rolling Stone as one of “25 People Shaping the Future,” and The Living was ranked third on Fast Company’s list of World’s Ten Most Innovative Architecture Firms.

February Membership Meeting

The ALNNJ Membership Meeting was held February 21st at Maggiano’s in Hackensack. Kenneth A. Huber, PE, of Langan Engineering, gave a presentation on Sustainable Waterfronts. Attendees were shown examples of how to identify suitable waterfront design approaches to encourage sustainable development, clean up contaminated waterways and waterfront properties, enhance ecology and wildlife habitats at the shoreline, improve resiliency during natural disasters, and provide safe public access to our waterways for future generations to enjoy.
**ALNNJ Member Meeting**
see alnnj.org for details

**New Members**
- Donia Abdelmotaal, Assoc. AIA
- Brian M. Callanan, AIA
- John Casolaro, Assoc. AIA
- Gustavo Diez Presilla, Assoc. AIA
- Alfred Eatman, Jr., AIA
- Yeshaiyahu Feinberg, AIA
- Travis Flick, Assoc. AIA
- John Fotiadis, AIA
- Pradeep Kapoor, Assoc. AIA
- Ciaran Kelly, AIA
- David Kushner, Assoc. AIA
- Ohsub Lee, AIA
- Jonathan M. McKee, AIA
- Bekim Muratovic, Assoc. AIA
- Gabriel E. Poliance, Assoc. AIA
- Kristina A. Pulsinelli, Assoc. AIA
- Eta Strulowitz, Assoc. AIA
- Lei Zhou, Assoc. AIA

**NATIONAL ARCHITECTURE WEEK** APRIL 21-27

**ALNNJ / AIANS ANNUAL TRADE SHOW** MAY 9th
Marriott at Glenpointe

**ALNNJ Member Meeting**
see alnnj.org for details

**Coming soon...**

**AIA Conference on Architecture A’19**
June 6-8, Las Vegas
conferenceonarchitecture.com

**Springtime in Washington D.C.**
Visit the National Building Museum and more. www.nbm.org

**New Allied Members**
- Michael Brown, Magrann Associates
- Linda Miller, Michael Halebian & Co.

**Recommendation**

**Springtime in Washington D.C.**
Visit the National Building Museum and more. www.nbm.org

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- Kristina A. Pulsinelli, Assoc. AIA
- Eta Strulowitz, Assoc. AIA
- Lei Zhou, Assoc. AIA

**ALNNJ also welcomes the following New Allied Members**
- Michael Brown, Magrann Associates
- Linda Miller, Michael Halebian & Co.

**The Architects League looks forward to your involvement and participation.**
Please introduce yourself at the next meeting or event.

**The Value of Good Design**
thru May 27, 2019
The Museum of Modern Art
moma.org

**The Road Ahead:**
Reimagining Mobility
thru March 31
Cooper Hewitt Museum
coophewitt.org

**April 2019**

**ALNNJ Member Meeting**
see alnnj.org for details

**22 thru April 2019**
Skyscraper Museum
skyscraper.org

**May 2019**

**ALNNJ / AIANS ANNUAL TRADE SHOW**
MAY 9th
Marriott at Glenpointe

**May 5th**
**TED KESSLER WALKING TOUR**
Long Island City and Hunters Point

**JUNE 6-8, LAS VEGAS**
A’19 Conference on Architecture
conferenceonarchitecture.com

**Applon’s Muse**
The moon in the age of Photography
July 2 thru Sept 22nd.
The Metropolitan Museum of Art
metmuseum.org

**City of Workers,**
City of Struggle
Opening May 1st
Museum of the City of NY
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**May 1st**
**TED KESSLER WALKING TOUR**
Long Island City and Hunters Point

**Opening May 1st**
**Museum of the City of NY**
**City of Workers,**
City of Struggle

**Opening June 6th**
**Museum of the City of NY**
**The Voice of the Village**
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**NATIONAL ARCHITECTURE WEEK** APRIL 21-27

**May 20th**
**MOMA Young Architects Program 2019**
June thru September
PS1
moma.org

**Opening May 1st**
**Museum of the City of NY**
**City of Workers,**
City of Struggle

**MAY IS HISTORIC PRESERVATION MONTH**