



Technology Impacting Practice

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Executive summary

The Technology Impacting Practice (TIP) Area of Study has been a topic of discussion within the AIA Strategic Council for well over five years. This report summarizes research and findings to frame a “no member left behind” roadmap and framework for digital transformation.

TIP’s focus this year was to continue the work from TIP’s 2020 Call to Action Virtual Summit on Digital Transformation’s key problem: frame members’ needs, hypothesize solutions, and validate gaps to create a roadmap to a “no member left behind” framework for digital transformation.

Goals

- Identify: What is the problem we are trying to solve? What’s our focus? Why is this important?
- Framing needs: Create a framework for digital solutions, innovation and development body, “no firm left behind” roadmap, and toolkit alongside resources to enhance offerings for members’ future needs.
- Hypothesize solutions and validate gaps: Use the [AIA Strategic Plan](#), market drivers, member needs, Strategic Council Areas of Studies and Knowledge Communities gaps to show relevance of recommended solutions.
- Recommend and implement.

Process

In TIP’s 2020 Virtual Summit, we invited 12 AEC tech industry experts who urged us to take action. The Technology in Architecture Practice Knowledge Community was a key collaborator. The summit allowed us to quickly identify how new innovative technology-driven solutions have exponentially grown, especially during the pandemic, and how these could potentially outperform AIA members’ architectural services.

This summit centered on a series of questions and identified opportunities:

- Do we lead or follow? Developing new ways of practice—embrace change and transform
- Do we innovate or die? New ways of delivery—leverage outreach to other industries while onboarding new talent—open our borders
- For richer or poorer? New ways of monetization—create savvy professional services

In 2021, we created a roadmap to identify why this is important, frame members’ needs, find opportunities, and create hypotheses and identify gaps. These findings were further validated with internal and external AIA stakeholders: AIA Strategic Council, Knowledge Communities, Small Firm Exchange, Large Firm Roundtable, Bethune Fellows, academia, COTE, DBIA, Foresight Digital, and AIA staff.

Executive summary

The members-group validation discussions centered on the following main roadmap topics:

- Creating a framework for digital transformation
- Establishing a digital standard of care
- Creating a practice/members' innovation advisory body

Each topic was further evaluated to identify:

- The role/responsibility of AIA: Should it lead, follow, have more visibility, educate, support, partner with other industries, or do nothing?
- Suggested actions: Should AIA have a board-level committee, create a resolution, formalize programs, create a taskforce, hire a consultant, or conduct a member survey?

Data on these validations was collected through a series of workshops in MURAL during three months of weekly meetings to formalize discoveries and recommendations.

Discovery

While AIA could provide education to the components on digital-first best practices, TIP's collaborators and workshop participants indicated that their most pressing need was to simply understand where to start, and where they expect AIA to lead by example.

TIP's validation centered on a member-centric approach to create:

- Special Advisory Panel
- Framework for digital transformation
- Standards for digital adoption

It also identified:

- Threats
- Lessons learned
- Member surveys on technology
- Special Advisory Panel's scope with digital maturity assessment as prerequisite

The Institute, profession, and the AEC industry are at the tipping point of change where digital transformation and automation will limit the relevance of the architect's role in society and in the design and construction industries. We found that small firm practitioners, especially, are the most vulnerable.

Recommendations

| RECOMMENDATIONS | VALUE TO THE PROFESSION | FINDINGS |
|--|---|--|
| 00 Special Advisory Panel | Ensure alignment with Code of Ethics & Strategic Plan | <ul style="list-style-type: none"> Lack of digital competence means we fail at our core mission. |
| 01 Assets Digital Maturity | Understand where we (profession / members) are versus market needs & trends | <ul style="list-style-type: none"> No standard methodology / baseline Lack of understanding impact of market relevance vs lagging adoption rates. |
| 02 Develop Overall Strategy | Assertive stance that acknowledges digital-first practice shift | <ul style="list-style-type: none"> Small and medium firms can't afford Must broaden the tent to gain expertise / partners Institutional knowledge drained |
| 03 Launch Framework | Comprehensive resources & tools | <ul style="list-style-type: none"> Empower members' & profession's relevance / influence Need effective data/tech structure |
| 04 Standards For Digital Adoption | Digital best practice | <ul style="list-style-type: none"> Gap in acknowledging impact of digital project data on risks & liabilities Contract Docs maturity misalignment with tech capabilities |

Implementation

TIP's recommendation to the AIA Board of Directors is to move decisively on this call to action and convene a Special Advisory Panel to:

- Implement a member's digital maturity assessment;
- Develop an overall strategy;
- Launch a framework for digital transformation; and
- Develop standards for digital adoption.

Conclusion

The Technology Impacting Practice Group, supported by the Strategic Council, considers these findings to strongly align with AIA's Code of Ethics, Canon I – Ethical Standards of Knowledge and Skill, and AIA has the obligation to equip and digitally transform its members to support AIA's goals and mission. This imperative and significant step toward digital transformation of its members will ensure development of further scalable climate action and equity goals while upholding AIA's Code of Ethics.

Furthermore, this initiative will also empower AIA's strategies, align with the [Guides for Equitable Practices](#), and operationalize AIA imperatives, but most importantly it will empower members to sustain their relevance in today's world and in the built environment.

Stakeholders consulted

Validating TIP's findings internally and externally

The Technology Impacting Practice Group focused on digital transformation's key problem to frame needs, find gaps, and validate findings with AIA member groups and external partners.

AIA staff

Kathleen McCormick, CAE, AIA Firm Engagement Director – Center for Practice (CFP) & Firm Benchmarking 2022

Jeffrey Raymond, Vice President of Product & Technology Strategy

Terri Stewart, Hon. AIA, Senior Vice President, Knowledge & Practice

Matt Welker, Director of Sustainability Group – DDx

Strategic Council

Area of Study Sprint: Scalable Climate Action – Mary Ann Lazarus, FAIA; Paul Dennehy, FAIA

Area of Study: Rural + Suburban – Kirk Narburgh, FAIA

Knowledge Communities

Kjell Anderson, AIA, COTE National Advisory Group member

Billie Faircloth, FAIA – Committee on the Environment (COTE) National Advisory Group

Peter S. Macrae, AIA – Practice Management (PMKC)

Bradford J. Prestbo, AIA – Technology in Architectural Practice (TAP)

Jeffrey Lee Reynolds, AIA – Construction Contract Administration (CCA)

Laura F Stagner, AIA – Project Delivery (PD)

Small Firm Exchange

Venesa Alicea-Chuqui, AIA

Matthew Clapper, AIA, Chair

Large Firm Roundtable

Peter Devereaux, FAIA, Chair and CEO, HED

Brad Lukanic, AIA, CEO, CannonDesign

Bethune Fellows

AoS on Technology: Phil Bona, FAIA; Rick Master, AIA; Scott Busby, AIA; Jeffrey Ferweda, AIA; Bruce Turner, AIA; Ilyia Azaroff, FAIA; Jack Morgan, AIA; Dan Hart, FAIA,

Academia

Alireza Shojaei, PhD, PMP, LEED Green Associate, Virginia Tech adjunct professor.

External

Zigmund Rubel, FAIA, Co-Founder, Foresight Digital

Brian Skripac, Assoc. AIA, DBIA, CM-BIM, Design Build Institute of America (DBIA)

Stakeholders Consulted

2020 Call to Action

In 2020 the Technology Impacting Practice Group interviewed at least a dozen leading-edge tech experts and companies, and it also held a virtual summit that involved 12 AEC tech industry experts.

AEC tech industry experts:

Sandeep Ahuja & Patrick Chopson, Co-Founders, Cove Tool
Craig Curtis, Partner & Director, Mithun
E-Kat Dovjenko, Program Manager & Consultant for Google's R+D Lab
for the Built Environment
Clifton Harness, CEO, TestFit
Ian Keough, CEO, Hypar
Rob Roef, Business Development Manager, Applied Scientific Research TNO
Anthony Vanky, PhD, Professor in Urban Planning, UMT College
David Weir-McCall, Business Development Manager, & Kenneth Pimentel,
Strategic Development Manager, Epic Games
Arol Wolford, CEO & Joel Pennington, Head of Product, VIM

Technology in Architecture Practice KC key collaborator:

Ryan Johnson, AIA, Chair

Strategic Council Area of Study Group:

Mindy Aust, AIA
Roderick Ashley, FAIA
Erin Conti, AIAS
Gail Kubik, Assoc. AIA
Daniel LaPan, AIA
Natasha Luthra
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Digital literacy definitions

Digital transformation

Digital transformation goes beyond digitization by creating a comprehensive change to an organization's business strategy.

The practice of employing digital technologies to change a process, product, or capability so dramatically that is unrecognizable compared to its analog form.

Digital maturity

A measure of an organization's ability to create value through digital, which is a crucial predictor of success for companies launching a digital transformation.

Digitization

The process of converting information into a digital (i.e., computer-readable) format.

Strictly speaking, digitizing means converting analog source materials or processes into a digital alpha/numerical format.

Digital first

Sometimes also called "digital by default," this is the act of striving toward organizing in a digital environment.

Approaching any new opportunity, or problem, with the assumption that the solution should be as digital as possible.

Members’ digital maturity assessment

Findings

For context, the **construction industry’s productivity has only advanced 1% in the last 20 years**. Compare that against the first 90 days of the pandemic, where the global digital market **gained decades worth of growth**. A **University of Oxford study** estimates 52% of design professionals will be displaced by computerization in the next decade.

During its investigations this past year, TIP found that AIA lacks a proper digital maturity assessment to guide any strategic digitalization decision internally or externally. Similarly, small firms are the most at risk of becoming irrelevant given similar challenges: lack of understanding of the impact of market relevance versus lagging tech adoption rates and no standard assessment methodology nor visibility into market-comparable baselines. Unfortunately, our industry appears to willfully ignore what other sectors have grown to accept: Digital competence equals market relevance.

The University of Oxford estimates,
**“52% of design professionals will
be displaced by computerization
in the next decade.”**

AIA’s role on digital transformation

AIA’s 2022 AIA Operating Plan does not comprehensively address digital transformation. AIA’s position regarding climate action and equity requires these goals to be operationalized by member firms. Advocating for the “why” has limited traction without an articulated path toward implementation at the member level.

Conclusion

Our discussion with many AIA stakeholders produced a consistent request: AIA needs to lead by example in this transformation. If AIA wants members to meet the overarching strategic goals of the organization, it also must genuinely support its members in their digital transformation, starting by assessing how they measure up against market needs and looking for opportunities beyond the purview of traditional practice.

Develop an overall strategy

Findings

Over the past five years Strategic Council Areas of Study have engaged in the future of practice and how technology is a critical ingredient of our future profession, offices, and workplace, which must change to meet the pressing demands of our industry.

Alongside these changes, our profession and society have been challenged by the quickly evolving impact of climate change and social inequity, inclusion, and a need for social justice. The combination of these challenges affects our physical environments and how and where we accomplish our work. For architects and designers to have a lasting impact on the society of future generations, AIA must provide our members and firms with the appropriate tools and resources that will allow us to have a substantive, measurable impact on our future.

Over the past two years, TIP discovered:

- AIA members and AIA services are not connected in their understanding of the digital transformation that is required.
- The industry outside of AIA is being shaped by digital transformation.
- We must prioritize digital education that allows AIA and its members to “broaden the tent” to become more inclusive within our workplaces and Institute by allowing digital-savvy individuals to be seen and welcomed as partners in this digital transformation.
- There is a lack of visibility to research.
- There is a lack of access to affordable digital tools and a digital maturity index (ABI-like).
- Several high-level gaps should be acknowledged by the Institute, like reimaginging the Technology in Architectural Practice Knowledge Community’s (TAP KC) role beyond that of a single-event Knowledge Community.
- There is a lack of outward perspective and limited outreach with members. This lack of relationships and resources limits effectiveness.

Recommended strategies

Through these work sessions TIP realized that many parts of AIA are trying to address the digital and technological needs of the profession; however, this institutional process and knowledge are not working together. Various teams, from the Strategic Council, TAP KC, AIA business lines, and various regions and chapters, all seem to desire more impact or change in this area.

It is recommended AIA “join up” these layers of thinking into a more tangible plan of action that would demonstrate to members how these topics intertwine with their existing practice operations and allow them to become active participants in addressing our global challenges, increase productivity and profitability through enhanced services, attract new employees with digital and technology backgrounds, and innovate with digital and visual services that enhance our role with clients, communities, and consumers.

Develop an overall strategy

In addition, AIA should:

- Educate members on mission-based investing that will lead to a nimble and educated profession that will allow architects to address our current and future challenges. If we are not nimble, our relevance will diminish over time and so will current and future membership within the Institute.
- Join forces to incubate and accelerate this digital transformation, which is necessary for our survival.
- Invest in research and development to support innovation and incubation of new technologies and services that will allow AIA and its members to add new business models and workflows.
- Prioritize digital education that looks beyond its borders.
- Focus on revenue generation (such as production) and building performance tools.

It is important that we digitally transform our membership to allow our profession to maintain a leadership role in how we shape and influence our built environment. Without the appropriate tools and protocols, AIA and architects will lose this important relevance in our industry.

Develop an overall strategy

Conclusion

It is imperative that AIA take an assertive leadership stance on the shift to a digital-first practice.

While AIA emphasizes decarbonization under Canon II and VI of the Code of Ethics, the Code should also address this issue in Canon I – Ethical Standards of Knowledge and Skill of the members. Our profession is at a crossroads and must address the three most important challenges of our society and environment. Given the radical changes in our environment, climate change must be urgently addressed. Members must have the tools and knowledge to move them toward net zero or net positive buildings and developments.

We must equip our members to support AIA's goals and the strategic plan through an urgent and rigorous action plan to lead the digital transformation in the AEC industry and profession and AIA's membership. We cannot afford to leave any firm or member behind.

Launch a framework for digital transformation

Findings

The adoption of digital technology in the architecture profession is behind other industries.

The recent [AIA Manufacturers Council's survey](#), while validating TIP's findings, ignored market needs, and demonstrated that most small and midsize firms are unaware of digital tools that address embodied carbon materials and sustainable strategies integration. The report suggests that small and midsize firms need support to keep up with Strategic Plan goals and are not implementing leading-edge technology in their practice due to a lack of awareness and cost. While big firms typically have the resources to implement new technologies, including knowledgeable IT staff and appropriate budgets, small and midsize firms need to outsource most of these new technology solutions. This is similar to the early creation of LEED Consulting Services, when firms did not have the staffing or knowledge to perform these services in-house.

These findings are part of TIP's focus in collaboration with cutting-edge technology leaders, thinkers, and creators who have shifted the landscape by addressing climate action, sustainable design (including energy modeling), and carbon neutrality. All of these are part of the AIA Strategic Plan.

Premise

The Institute, the profession, and the AEC industry are at the tipping point of change and disruption where digital transformation will limit the role and relevance of architects in society. This is not a discussion for the future but rather one about current risks and threats. TIP found that small firm practitioners are the most vulnerable.

Imagine how powerful it would be to empower small firms. This is the genuine path to scaling climate action while empowering AIA's strategies, aligning with equitable practices, and operationalizing AIA's imperatives.

Conclusion

AIA must develop comprehensive resources and a toolkit for digital transformation that aligns with the goals and imperative of the strategic plan. TIP does not suggest that AIA recommend specific software but rather define what software tools are available to address our current and future goals. This information will need to be updated yearly to keep pace with the rapid progress of technology.

This complex preparation will require AIA staff to develop, organize, and prepare a toolkit for all architects. This transformation can also start by cross-pollinating with all AIA member groups—such as the Small Firm Exchange, AIA Trust, COTE, Technology in Architectural Practice, Project Delivery, Center for Practice, Contract Administration, and the Practice Management Knowledge Community—thereby breaking silos. A technology-driven foundation can be created to establish a digital master toolkit repository to share information, programs, best practices, and common agendas among AIA member groups, related organizations, and schools of architecture. This foundation will allow AIA to partner with architectural tech partners, aligning the AIA mission with their interests and investments to establish equitable strategies for all.

Launch a framework for digital transformation

If membership alignment with the AIA Strategic Plan is one of AIA’s goals, then AIA has an obligation to assist in making this possible. AIA can do this by preparing a toolkit that assesses firm readiness, reduces costs by expanding the user base, and breaks organizational silos to foster collaboration and the sharing of information that is already available. AIA needs to organize internal processes around members and customers, providing an ease-of-use experience and identifying quick wins with clear benefits. Small and midsize firms would benefit from these resources, which will bring value to their practice and their role in society and the environment.

Moving decisively from aspiration to action

The “no member left behind” program



Develop standards for digital transformation

Findings

One of the primary findings from our exploration of digital practice trends is concern about competing entities accelerating past the architectural profession into areas where our digital practice expertise is deficient. This “third-party encroachment” into markets and services that have historically been the purview of the architect could occur because these entities could fill the gaps where our tech literacy and competence is lacking.

Advanced digital data utilization and the application of “big data” for more robust analysis and modeling of energy, carbon, climate, life cycle costs, and more by entities outside of architecture could erode our relevance and ability to lead on these subjects. As a profession, architecture lacks advanced data solutions and ecosystems, which inhibits us from leveraging our expertise and demonstrating value to our clients. Further, small and medium-sized firms are at an even greater risk of losing relevance in areas where the development and application of digital practice tools and methodology may be cost prohibitive.

Recommended strategies

First and foremost, the Institute should consider amending the AIA Code of Ethics and Professional Conduct to include the application of advanced methodologies for digital practice as a matter of professional responsibility. However, this cannot occur in a vacuum. AIA must lead in developing guidance on:

- Digital best practices and on expanding the potential of all members and member firms in this advancement. A plan for digital literacy must be created as a roadmap;
- Strategies for partnering with other allied entities such as ACD and MasterSpec along with other industry partners, where applicable; and
- Research to define digital best practices and emerging new technologies and issues like data interoperability and open-source BIM and other platforms, along with their potential to impact practice and preservation of the architect’s intellectual property.

The expectation of digital proficiency has the potential to impact the architect’s professional standard of care, both from the viewpoint of the client/community and from a legal perspective. Not only must we, as a profession, understand and embrace the application of new and emerging technologies within our practices, but we must also understand the moral, ethical, and legal need to embrace new technologies to meet our evolving obligation to the health, safety, and welfare of the public.

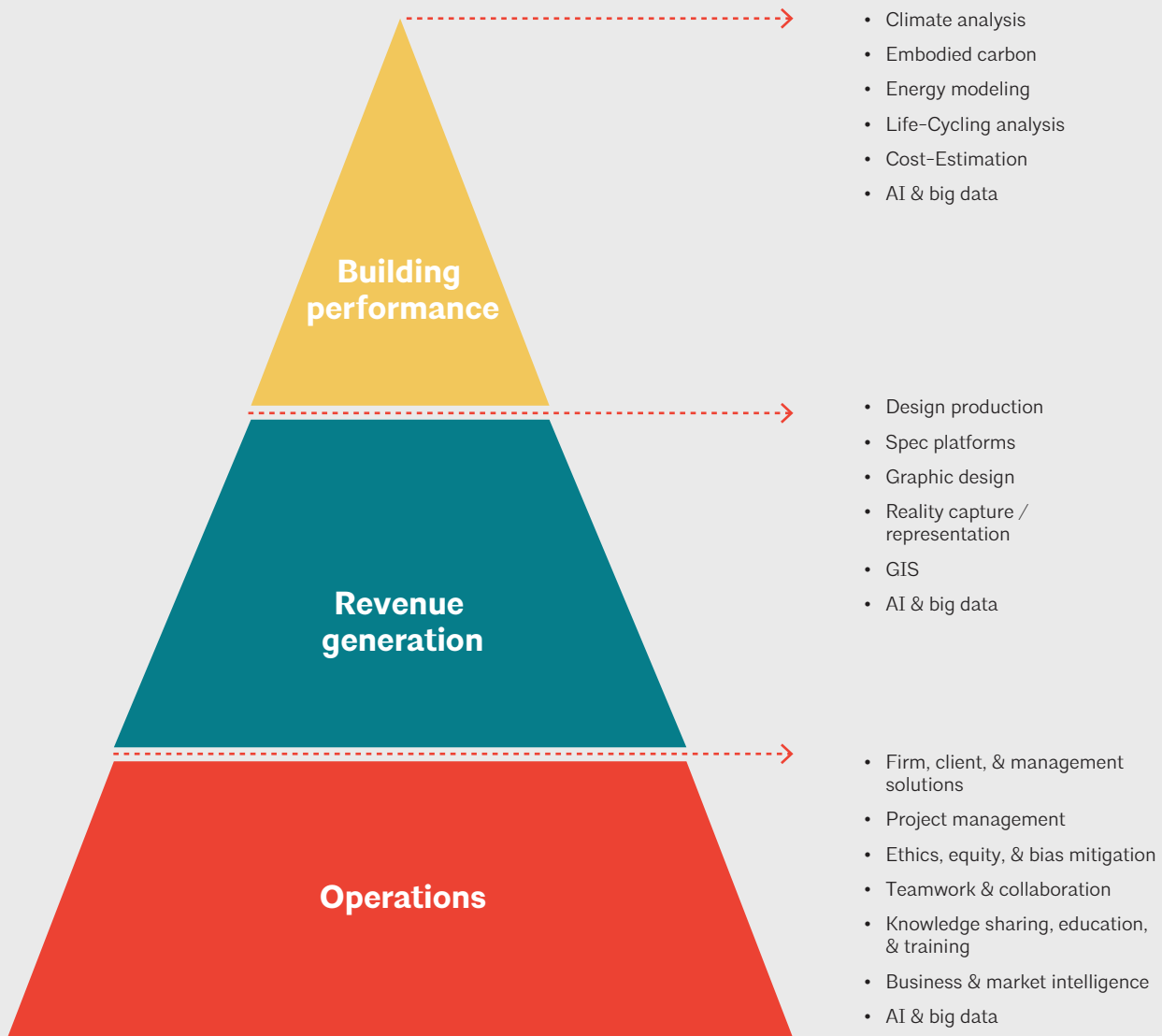
We must understand the liability implications from any and all shifts in the definition of what constitutes the standard of care going forward and stay current with the expectations it sets forth.

Develop standards for digital transformation

Conclusion

A lack of digital competence means we fail at our core mission, have less market relevance, and have fewer members. The Institute must develop a “no member left behind” roadmap so that all AIA architects can stay relevant and resilient in today’s digital world. Digital literacy and competence, along with an understanding and clear definition of the architect’s role and responsibilities in the “new normal” of advanced data and digital application, will ensure that all members excel in the emerging technology-based world facing architectural practice.

Digital solutions & member needs



Special advisory panel on digital technology

Charge

The Technology Impacting Practice Group, supported by the Strategic Council, strongly recommends that the AIA Board of Directors convene a Special Advisory Panel to implement the above roadmap strategies to ensure that no member is left behind on digital technology transformation, ensure we meet our core mission, align our strategic goals, and empower members to sustain their relevance.

The Special Advisory Panel would be composed of AIA stakeholders defined in this report, AIA Manufacturers Council, AIA Trust, and COTE to envision and implement a framework for digital transformation.

No member left behind

Special advisory panel’s suggested scope

