

Resilient Architecture

Back in the earlier days in my career, “resilience” meant business continuity and backup plans to keep network services up and running, and later it meant generators and uninterruptible power supply (UPS) so production in the plants was never impacted. Risk assessment was all about technology infrastructure because the bulk of my work centered around delivering services or products whose very quality depended upon 24/7 operating environments.

Today resiliency still means the business continuity and backup plans that were underpinnings to my technical career, but the buzz has moved to environmental considerations when one thinks of resilience. My present work exposes me to both the red tape of achieving regulatory progress and the can-do passion of grassroots successes. After reading an article regarding a skyscraper design in Chicago that intersects with the flyways of birds,¹ it seemed timely to delve into resilient architecture through a conversation with Sharon Gentges, principal of Joy Street Design, Inc., an architectural firm approaching its ten-year anniversary.

Q: ISACA members are no strangers to evolving technologies and standards. Can you overview some of the changes happening in architecture from your firm's view?

A: Architecture today is focusing on energy efficiency as well as net-zero compliance to create buildings and spaces that provide resilience for residents where they work and live. There are stretch code requirements that are voluntary today, but more and more communities are adopting these optional requirements as standard. Passive House² and the PHIUS+ Standard³ is where architecture is headed, by addressing environmental concerns with innovative designs.

Q: Is there technology to support these new standards?

A: Yes, Wärme Und Feuchte Instationar (WUFI)⁴ software helps architects simulate how building design is impacted by external and internal conditions. It can help manage tradeoffs of building features, like inefficient windows and bump-outs versus straight, box-like surfaces, and optimize

maintaining heat in the winter and exhausting that heat out to meet code requirements for internal air quality in summer. Data has become incredibly important to help manage each potential energy loss. But the software is heavy on modeling and not yet AI-based, so we have to start with best practices, and then model.

Q: How does energy efficiency and resiliency impact architecture?

A: The tradeoffs are mainly in design creativity. The most energy efficient buildings are those with the fewest angles. Every bump-out represents potential heat loss. When you talk about health impacts



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Is executive assistant to the Massport Community Advisory Committee (MCAC). Baxter is pleased that technology has allowed her to reinvent her career and continue learning through all of it. She had the privilege of learning technology and managing Fortune 100 client relationships at AT&T. Baxter then applied her expertise as an IT operations director at Johnson & Johnson before moving to compliance and risk management roles at AIG and State Street Corporation. After a brief period of running her own consulting business, Baxter joined MCAC, which advocates on behalf of communities impacted by the US State of Massachusetts Port Authority aviation and port operations. She applies her expertise to website redesign, drafting vendor requests for proposals (RFPs), updating bylaws, and providing regulatory support to the MCAC board. In her spare time, Baxter serves as compliance and operations officer for the ISACA® New England Chapter (Maine, Massachusetts, New Hampshire, and Vermont, USA) and volunteers on the Nantucket Lightship.



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from airborne particles, it's a matter of losing cost efficiency when creating that envelope that insulates the house and protects residents.

Q: What are the key criteria examined for resilient structures?

A: There are many, but the key criteria are:

- Energy efficiency
- Water use, especially for landscaping
- Indoor air quality, with energy recovery verification (ERVs) evaluating whether ultra-tight air envelopes have been created.

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Q: Are there other business challenges facing the architecture industry? How do you bridge the gap between business requirements and resilience requirements?

A: Business challenges focus on cost and code enforcement, especially with stretch codes like PHIUS+. Although buyers inherently want the kind of architectural resilience that provides comfort, clean air, and well-managed ambient noise, the cost of quality work can be high. Enforcement of codes can be challenging, especially given the limited inspection resources some municipalities have. And

this doesn't just impact new construction—building renovations present an even greater challenge from a cost and architectural compliance and resilience perspective. There is also the challenge of addressing neighborhood concerns, which is a formal requirement for many cities in the United States. Maximum creativity is often needed to accommodate those living near the project and still meet new building standards.

Today, compliant architecture is resilient architecture, enabling safe and environmentally sound buildings. Successful architecture requires getting ahead of trends and designing to stretch requirements, and working with developer teams who produce the intended design in a quality manner. Working with neighborhoods means maintaining design flexibility to align with community concerns while adhering to standards. With the underpinnings of regulations, cutting-edge standards, and design creativity, technologies remains one of the most impactful enablers.

Endnotes

- 1 Singh, M.; "US Buildings Kill Up to a Billion Birds a Year. These Architects Want to Save them," The Guardian, 27 December 2023, <https://www.theguardian.com/environment/2023/dec/27/birds-buildings-collisions-architecture>
- 2 The Passive House Network, <https://passivehousenetwork.org/>
- 3 About The PHIUS+ Standard, <https://commercial.phius.org/service-group/about-phius-standard>
- 4 WUFI, <https://www.wufi.de>

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