AIA Florida

Challenges, Changes and Relevance

2022 AIA Florida Strategic Council
Draft Summary Report

November 2022

Planning for practice transformation in a time of great change, while maintaining relevance in shaping the built environment

Team Members

2022 AIA Florida Strategic Council Members

Ignacio Reyes, FAIA, Chair
Immediate Past President

Lourdes Solera, FAIA, President

Stephen Panzarino, AIA

Majore Weibe-Reed, AIA

Brandon Wlosinski, AIA

Steven Pliam

Becky Magdaleno, CAE
AIA Florida Executive Director

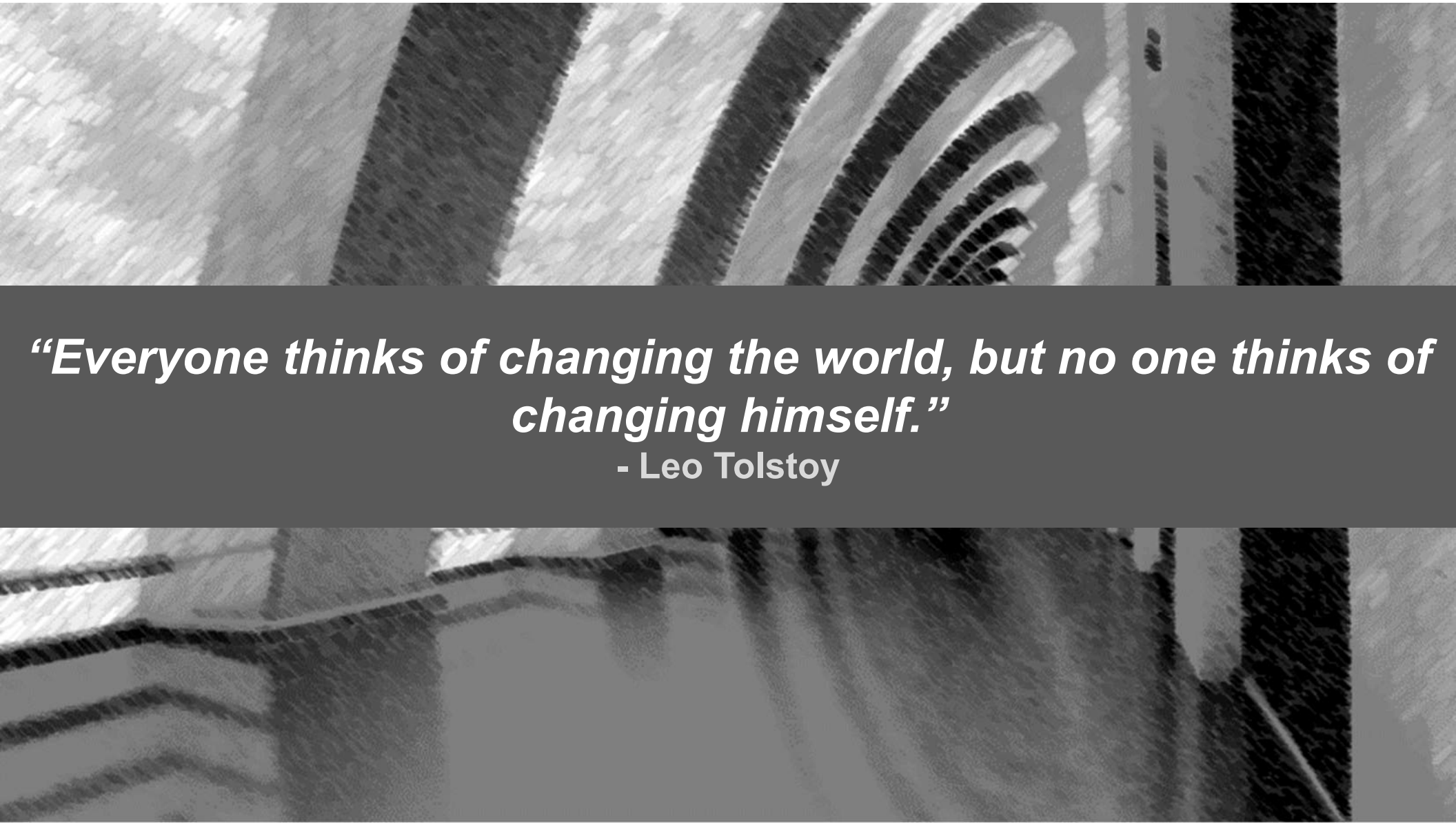
2022 AIA Florida Strategic Council Contributors / Speakers

Rick Wilson, ESQ
General Counsel

Dave Gilmore
CEO, Design Intelligence

Kory Bieg, AIA
Associate Professor UT Austin,
Principal OTA+

Topics and Concerns


“Everyone thinks of changing the world, but no one thinks of changing himself.”
- Leo Tolstoy

Areas of Focus

Alternative Delivery

Artificial Intelligence

Long-Term Relevance

Areas of Focus

Alternative Delivery

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Long-Term Relevance

Areas of Focus – Alternative Delivery

Challenges and opportunities for Design/Build delivery and the impacts on the practice of Architecture

Design/build is drastically different from traditional design/bid/build projects, and architects need to start treating it as such from the contract stage, out. Rick Wilson, general counsel for LEO A DALY, serves on the Alternative Delivery Committee for the company and is the primary negotiator for terms and conditions on alternative delivery projects. Furthermore, as general counsel, he oversees the claims those projects bring.

Wilson proved that the industry is trending more toward design/build projects, whether it be contractor-lead, designer-lead or financier-lead. That shift pushes the risk away from the project's owner and onto the design/builder and, ultimately, onto the architect. Delay is the biggest risk and generates some of the most significant claims; it is also one of the hardest claims to defend against. A successful defense usually involves costly professional analysis as well as information from the owner or contractor, who may also be the one filing the claim.

Another risk with design/build projects comes from using a firm, fixed price. In a contractor-lead design/build project, that contractor will bid the project out based on drawings that are not ready for construction. "There is still going to be issues and things missed," Wilson said. "It's literally not complete, but they want to rely on it." During the natural progression of the design process, costs can increase as details are refined and changed. The contractor can then claim the architect should have known those costs were likely. Wilson said that general contractors, unlike typical architectural clients, are more litigious.

Areas of Focus – Alternative Delivery

“They are going to come to us and say, ‘Hey, your price is too high,’” he said. “’We are going to lose this project because of you.’ They aren’t going to lose the project because of our price. They are very good and squeezing and getting as much as they can out of what little they have to work with.”

There are also challenges with a traditional defense architects have been able to use against claims – the betterment defense. In design/bid/build, general contractors with a problem go to the owner. If there is an omission, the general contractor will make a claim against the owner and the architect’s defense will be that there was a cost that would need to be paid, anyway. That is the betterment defense. However, in design/build, Wilson says, the ability to claim betterment is not entirely fleshed out. The problem lies in the use, again, of a firm, fixed price. With a firm, fixed price, the cost of the omission would not have to be paid anyway, weakening the betterment defense.

- Other risks of design/build include:
- Shop drawing and contractor submittal reviews.
- A failure to properly price risk.
- Continuous rephasing or repackaging.
- Designing to budget.
- The project being dropped after the designer has already invested.

Areas of Focus – Alternative Delivery

There is also a risk of conflict when contractors move ahead with design that goes against what, in the architect's opinion, is best practice. Wilson says that this is where your contract language comes into play, preventing what he calls value engineering purgatory. "You will spin your wheels, especially if your contract language isn't strong enough," Wilson said. "They will come up with all these different ideas to fit them to make their project better for them." If firms are not careful, they can spend all of their profits – which are locked into that firm, fixed price – chasing poor building practices.

The first, best place to keep the architect safe is the contract, Wilson said. It can help you navigate the what-ifs in a project safely. Contracts need to recognize risks and common issues in design/build. Some core contract terms are:

- Limits of liability (LOL).
- Quantity disclaimer.
- Design progression milestones and add services for redesign. Liquidated damages cap.
- A design schedule that is approved or jointly developed.
- A clear waiver of construction means and methods.
- A shop drawing disclaimer.
- Prevailing party costs. It is not common in the U.S. for you to recover costs for defending a claim, even if you win, Wilson said. By including prevailing party costs in the contract, you are protected if you defend against a claim and win. It may make the design/builder more hesitant to bring a superfluous claim, he said.

Areas of Focus – Alternative Delivery

After strong contract language, the next line of defense is proper project management, including clear, upfront packaging and design progression with regular documentation. Teaming agreements can protect architects, especially during the project pursuit process, when design professionals often have to work without having collected a fee. “The baseline law – mind you, law still applies if they don’t have a teaming agreement to this contractual relationship – is in their favor,” Wilson said. “There’s a lot of risk involved at that stage. Do not give our designs and plans until there’s a signed TA from the design/builder and general contractor.”

Core terms for post-award contracts should be included as an exhibit with the teaming agreement, Wilson suggested, so that the general contractor can get a glimpse of what working with the architect will be like should the team win the project. “It’s key terms so that you don’t end up in a position where you can’t get these terms because of differences and risk allocation,” Wilson said.

With a strong teaming agreement and contract in place, documentation is the next key to a successful design/build project. Documentation of decision-making and other processes, such as meeting minutes and follow-up emails, is critical as the design/build project moves forward. So is properly pricing out risks, Wilson said, which he does with a risk register. Risks that should be considered include:

- Contractual risk.
- Technical aspects of the work.
- Risks from the area and land around the work site.
- Internal risks.
- Risks from external entities.

Areas of Focus – Alternative Delivery

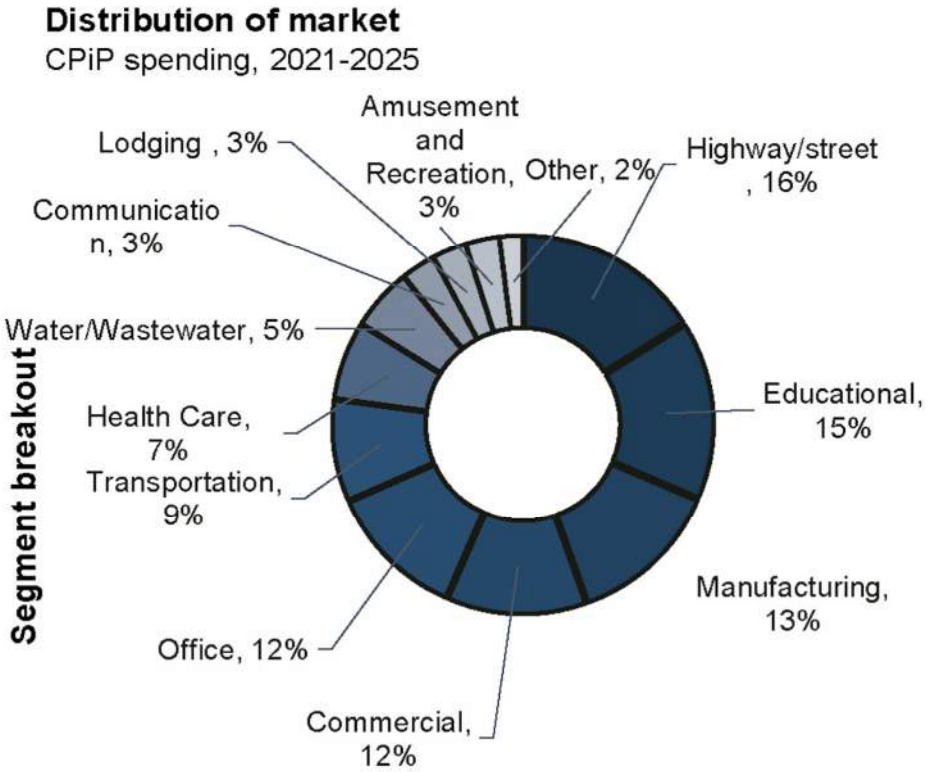
The risk register asks users to list out the risks, mitigating factors, severity, probability and other facets of the design/build project. The sum of the costs from the register is the contingency for that project. “The bigger the project, the higher that contingency should be,” Wilson said. If the risk is very high, consider carefully if you should move forward with the design/build project.

“I use the analogy of walking down a sidewalk. If you know there’s a giant pothole, you can do things to avoid it. You can plan to take another route. You can plan to walk around. You can plan to jump over it,” he said. “You can say, ‘You know what? I don’t care about the pothole and I’m going to keep going, anyway. It’s not that deep.’ That’s a valid plan, too. But you’ve identified the risk and you have a plan for tackling the risk. Knowledge is power.

Alternative Delivery Model – Design Build

Design-Build expected to grow

- 7.6% growth rate from 2021 to 2025
- Highly prevalent in Federal procurement
- Perception of expedited schedules



Source FMI

Alternative Delivery Model – Design Build

	Billions of current dollars	2021e	2025f	CAGR (21-25)
WEST	Mountain	$24.3	$31.9	7.1%
	Pacific	$51.9	$66.3	6.3%
MIDWEST	East North Central	$35.7	$45.0	6.0%
	West North Central	$26.4	$34.9	7.2%
NORTHEAST	New England	$10.9	$14.8	7.8%
	Middle Atlantic	$34.1	$46.7	8.2%
SOUTH	South Atlantic	$53.5	$74.4	8.6%
	East South Central	$13.9	$18.6	7.6%
	West South Central	$52.2	$73.1	8.8%
U.S. Total		$303.0	$405.7	7.6%

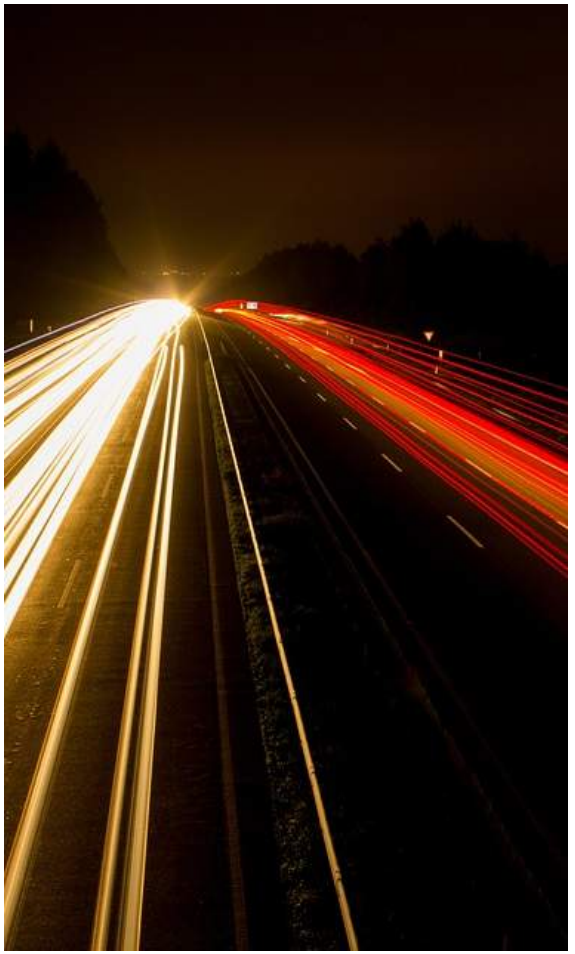
Source FMI

Alternative Delivery Model – Design Build

Positive Perceptions:

- **Speed**
- Cost Control
- Efficiency

There are benefits as well as risks to the architect.



Alternative Delivery Model – Design Build

"… pushes risk away from the project's owner and onto the Design-builder and ultimately, onto the architect."

- Rick Wilson, General Counsel, LADCO

Alternative Delivery Model – Design Build

Risks:

- ***Delay Claims / Issues***

Alternative Delivery Model – Design Build

Risks:

- ***Delay Claims / Issues***
- ***Firm Fixed Price***

Alternative Delivery Model – Design Build

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- ***Delay Claims / Issues***
- ***Firm Fixed Price***
- ***Omission / Betterment Defense***

Alternative Delivery Model – Design Build

Risks:

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- ***Value Engineering Purgatory***

Alternative Delivery Model – Design Build

Risks:

- ***Delay Claims / Issues***
- ***Firm Fixed Price***
- ***Omission / Betterment Defense***
- ***Value Engineering Purgatory***
- ***Quantity Growth***

Alternative Delivery Model – Design Build

Risks:

- ***Procurement Investments***
- ***Can circumvent qualifications-based selections***

Recommendations moving forward

Recommendations

1. Intensify Legal Education for Architects in preparing for Design-Build

Limits of Liability

Disclaimer of Quantity Growth

Liquidated Damages Caps

Shop Drawing Disclaimer

Recommendations

2. Continuing Education for identifying risks in design build.

How to create a risk register

Fee development to reward risk

Clearly articulated initial teaming agreements

Recommendations

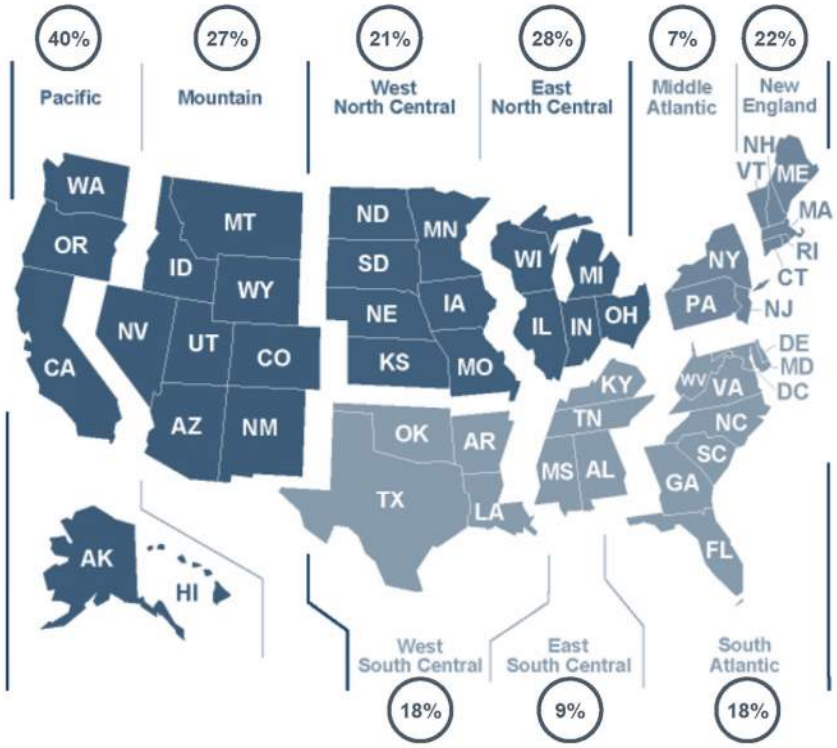
3. Promote Progressive Design-Build structures

Qualifications based selections

Limited initial investments

Partner towards fixed price

Alternative Delivery Model – Design Build

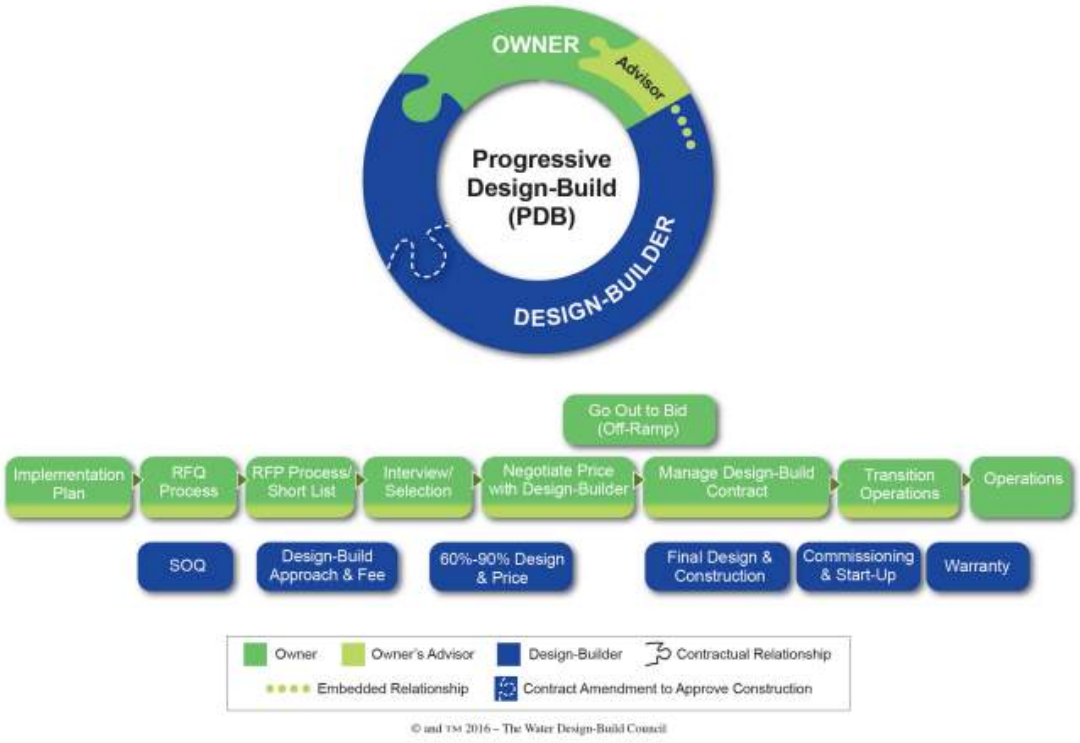


"Progressive" Design Build

- Rapid growth rate among public clients
- Most often associated with aviation, water / waster water and manufacturing sectors
- Rapid growth in private sectors

Source FMI

Alternative Delivery Model – Design Build



"Progressive" Design Build

- Procured through a qualifications process
- Phased approach mitigates risk of cost overruns
- Not as well used in current procurement processes

Source DBIA

Areas of Focus

Alternative Delivery

Artificial Intelligence

Long-Term Relevance

Areas of Focus

Kory Bieg is not interested in the arguments about artificial intelligence and sentience. What he is interested in is using AI as a tool for expanding creativity.

“What are the creative potentials of this tool and how might (those potentials) start to feed into my process in a way that I couldn’t predict,” Bieg asks.

AI, through computational design, is spreading like wildfire through art, graphic design and architecture. While the possibilities and the pace of change are both frightening, Bieg said it helps to see computational design as not such a radical departure from the work architects are already doing.

“It is just a new tool that adds to a suite of other tools that we have already used. It uses the same kind of frameworks that we are already used to,” he said.

Start with the word compute. It comes from the 17th century and means to come to a conclusion through following a series of steps or procedures. Viewed that way, computational design suddenly becomes analog.

Artificial intelligence is also much more common in our lives already than we think, Bieg said. Through just checking your phone messages, you are interacting with AI. When you see suggested links, ads or stories, that is AI predicting your behavior.

Areas of Focus

In the same way it predicts your behavior – drawing from a data set of your previous choices to deliver ads that it thinks you would interact with – it can extrapolate designs. The quality and success of those designs, much like the quality and success of suggested ads, depends on the quality of the data that you give it.

Data sets for the AI tools in architecture, much like other data sets, are huge libraries of images that are bought and sold. Some are even free. But all rely on the quality of the information stored within.

“How things are tagged really matters,” Bieg said, noting that it’s important for the AI to understand that humans are humans and traffic lights are traffic lights.

Artificial intelligence uses those data sets in myriad ways. One is interpolation, where the AI takes the images and blends – interpolates – them, feeding back into the data set to create solutions within the parameters the user defined.

It can also use diffusion-based text-to-image AI, which takes images and breaks them down into dots, then takes the data sets and groups the dots according to the data and user parameters, generating results. The user can describe, for instance, qualities such as translucency and materiality.

Areas of Focus

AI can also consider pattern, pushing it farther and farther until it resolves the pattern into architectural materiality.

“You start to actually take form and replace pattern with material and you start to interlock these elements together,” Bieg said, showing examples of a translation of a camouflage pattern into a building. “What other patters might I use to start to create and architecture that weaves pattern into form?”

As the AI works, the pattern begins to transcend its two-dimensional space and become a threedimensional structure. While the sheer possibilities of AI are as immense as the technological advancement is rapid, Bieg is quick to simplify.

“At the end of the day, these are just images,” he said. “We draw sketches before we start threedimensionalizing our ideas. To me, this is just sketching with a little more detail, a little more materiality.”

And the practical uses of this AI are also much closer than we may think.

Areas of Focus

“You can create a rendering of a project and say, ‘here’s a rendering of a project, now give me 30 variations of it,’” Bieg said. “You can take these to a client and say, ‘Do you like this door more than that door? This window more than that window?’ You can start to do it without the long exercise of remodeling. You can do this in, like, two seconds.”

But using AI is not without danger. Too small of a data set or the wrong parameters can lead to something called overfitting, where the output projects are too close in design to existing work. However, as interfaces become more sophisticated, architects can exercise more control.

“As architects, the more control we have, the more we rely on expertise,” Bieg pointed out, meaning that however easy AI tools are to use, there still needs to be education, understanding and practical application operating them. There is a leap between the artistic expression that comes from the AI and the reality of a structure that requires human input, not just in the form of data sets and definitions, but also in the knowledge of things such as materials, performance in local conditions and more.

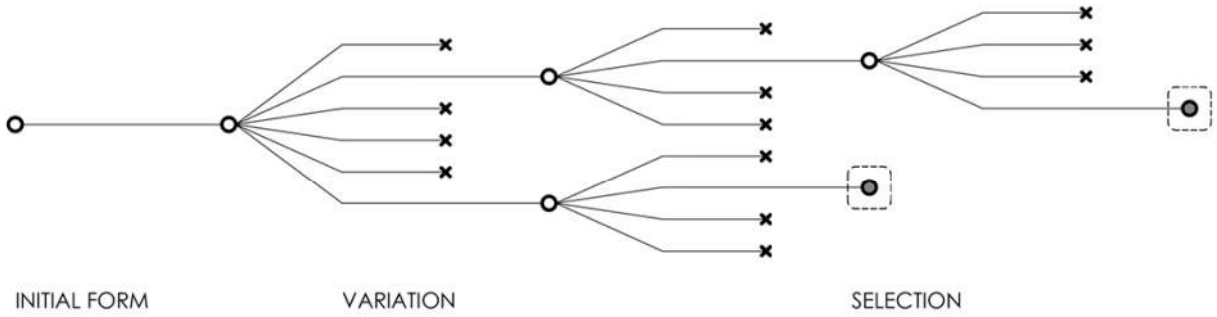
The translation of computer-generated materials into known entities is still something that requires a properly trained human brain, Bieg said, but there are ways AI can still evolve to help, modeling building concepts down to the bolts.

“It’s not there yet,” he said. “But I can see it happening.”

AI in Design

Exploring alternatives

Evolution Algorithm produces geometries that work for sustainable goals, or views or programmatic space



Source Kory Bieg / OTA + Design

AI in Design

Exploring alternatives

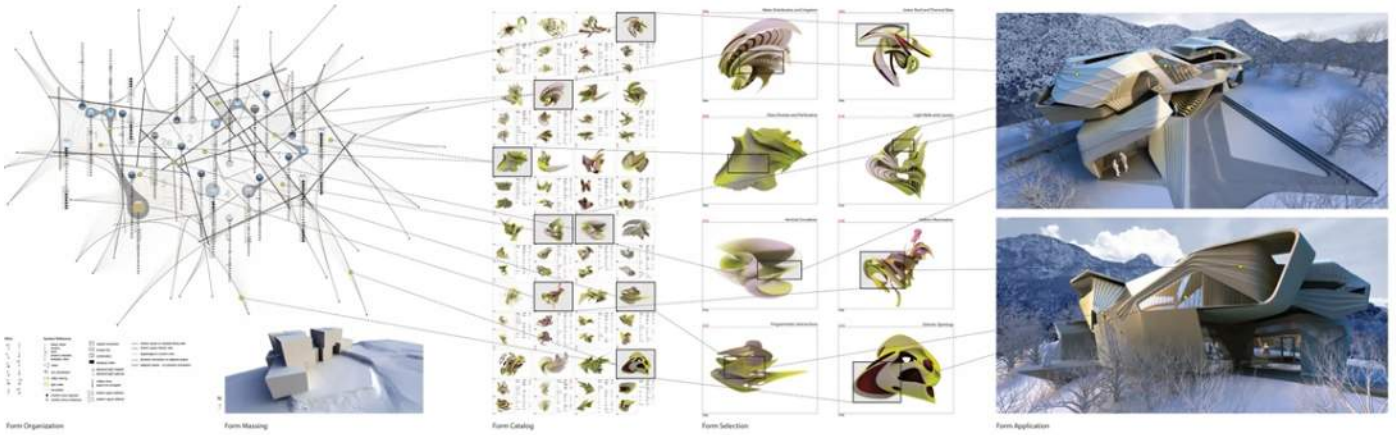
Catalogue the qualities of the spaces – including utilities

Source Kory Bieg / OTA + Design

AI in Design

Exploring alternatives

Maps the needs to final forms



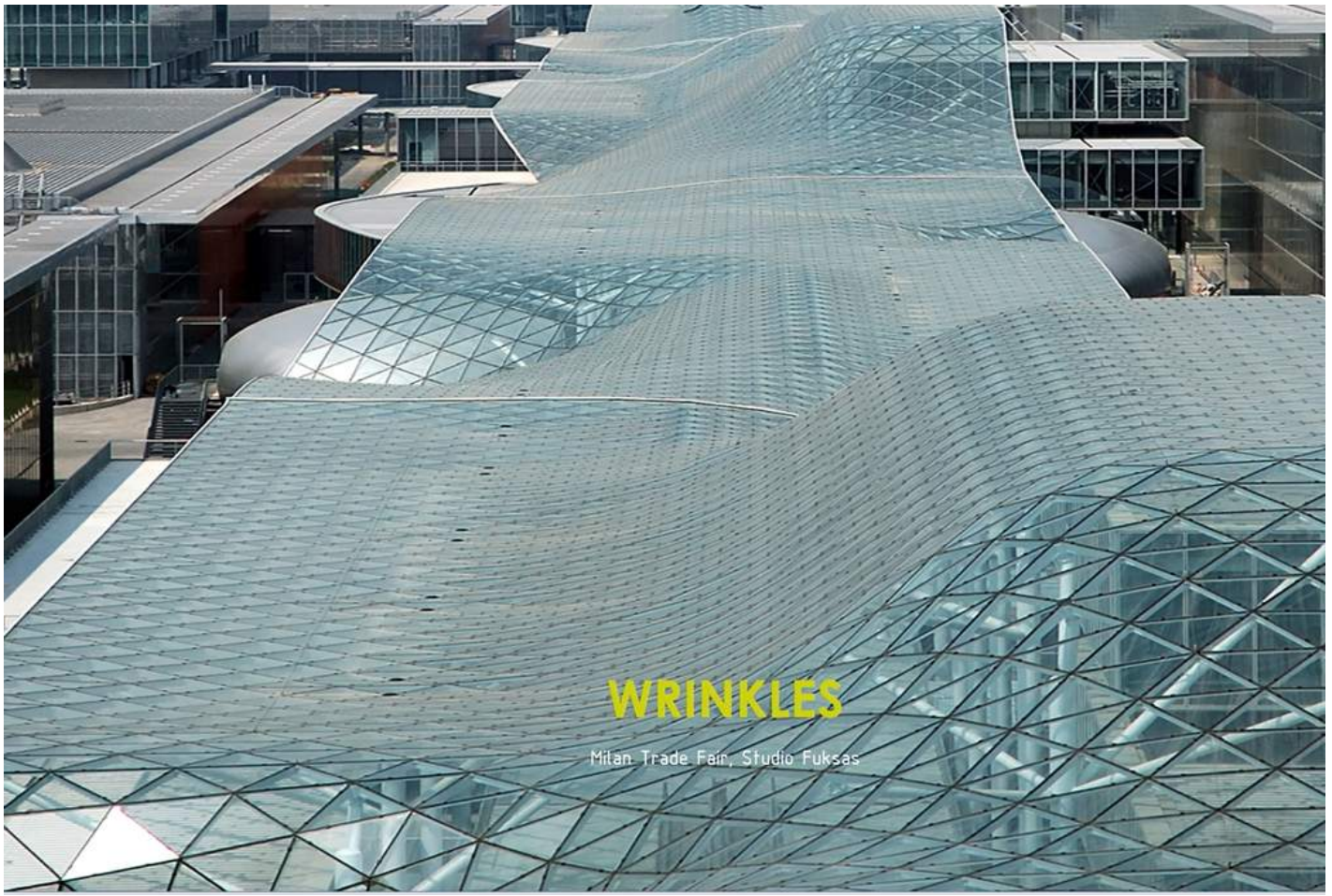
Source Kory Bieg / OTA + Design

Source Kory Bieg / OTA + Design

AI in Design

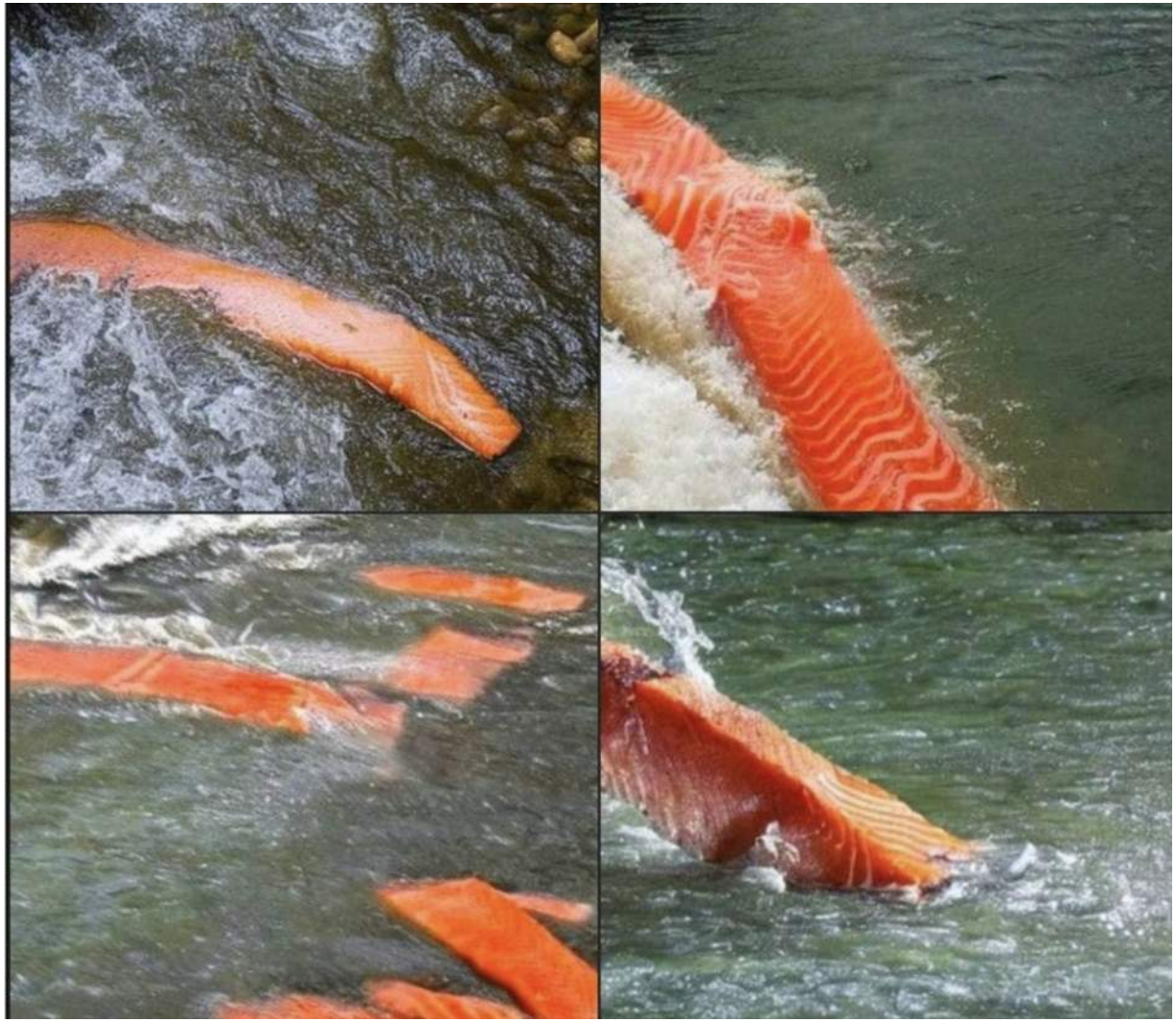
Exploring fluid motions

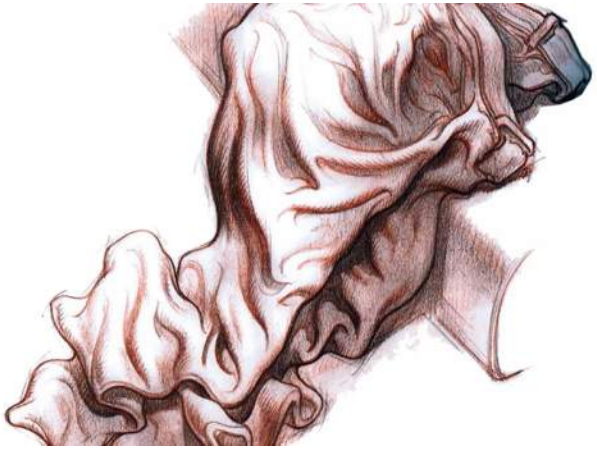
Can AI learn to model materials against forces and engineer outcomes

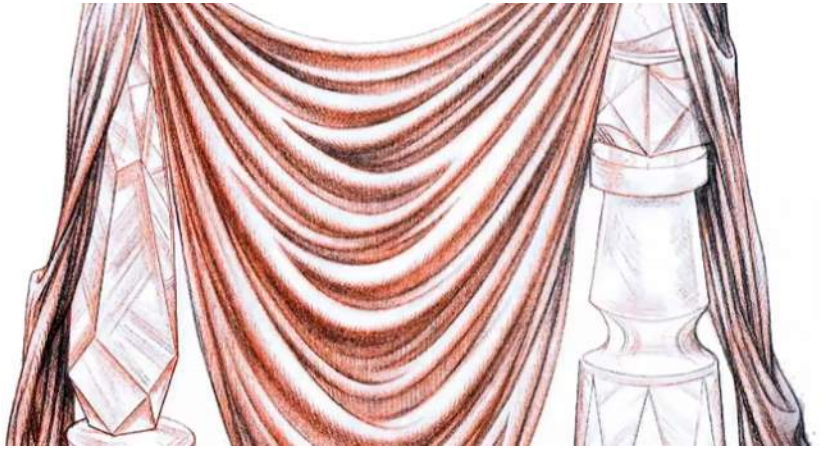


Source Kory Bieg / OTA + Design

Can AI Generate Art?



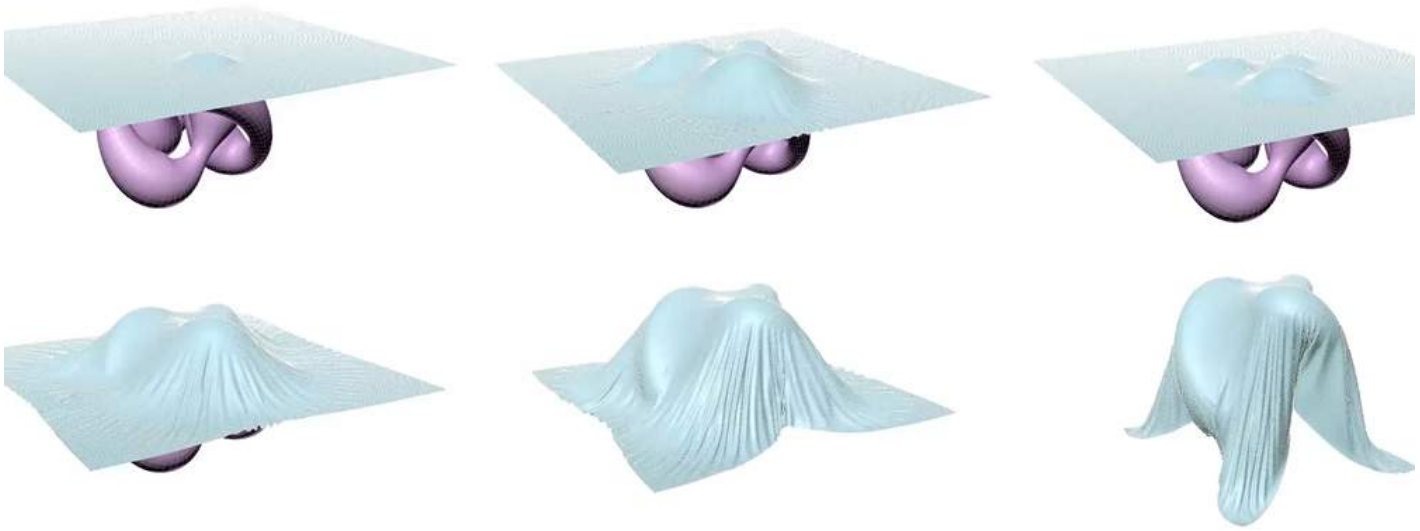




Source Kory Bieg / OTA + Design

AI in Design

Testing artistic expressions



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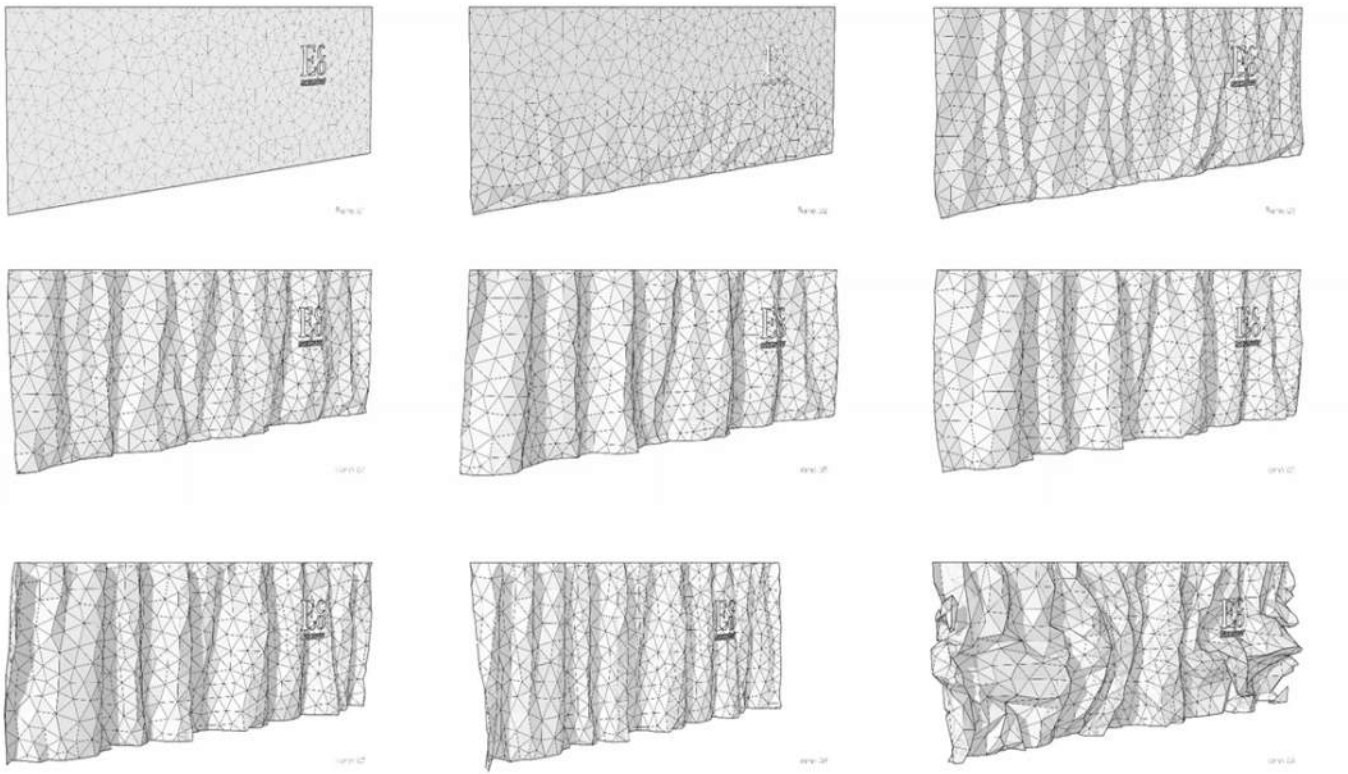
AI in Design

Letting the "behavior" of the tool test the model against material properties



Source Kory Bieg / OTA + Design

AI in Design

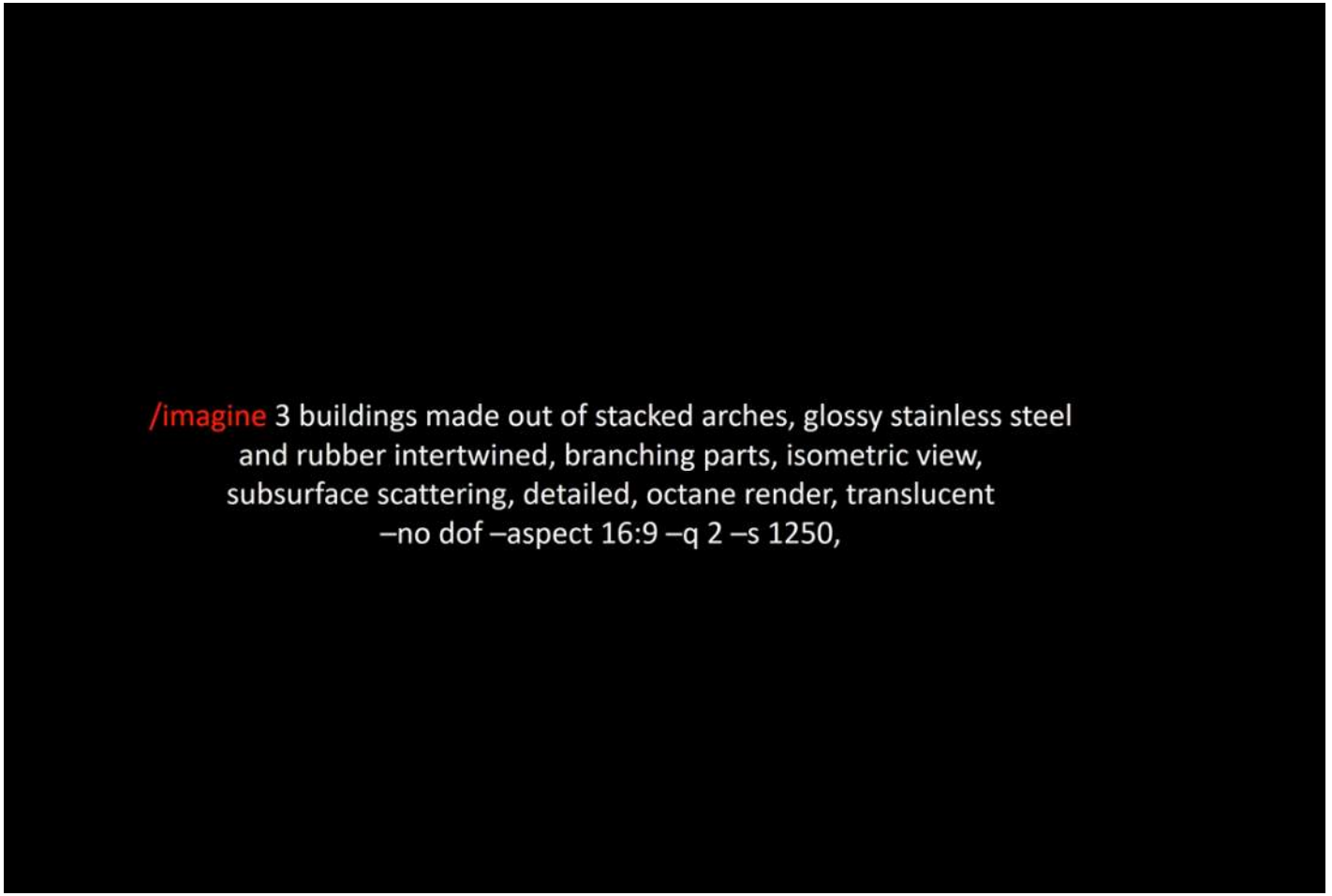
AI utilizes three different principles to function:

- ***Data Sets***
- ***Models***
- ***Interpolation***

Source Kory Bieg / OTA + Design

AI in Design

Text to AI instruction



Source Kory Bieg / OTA + Design

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AI in Design

Letting the "behavior" of the tool test the model against material properties

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AI in Design

Inform the prompt on influence and style – Zaha Hadid influence

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AI in Design

Form driven prompts

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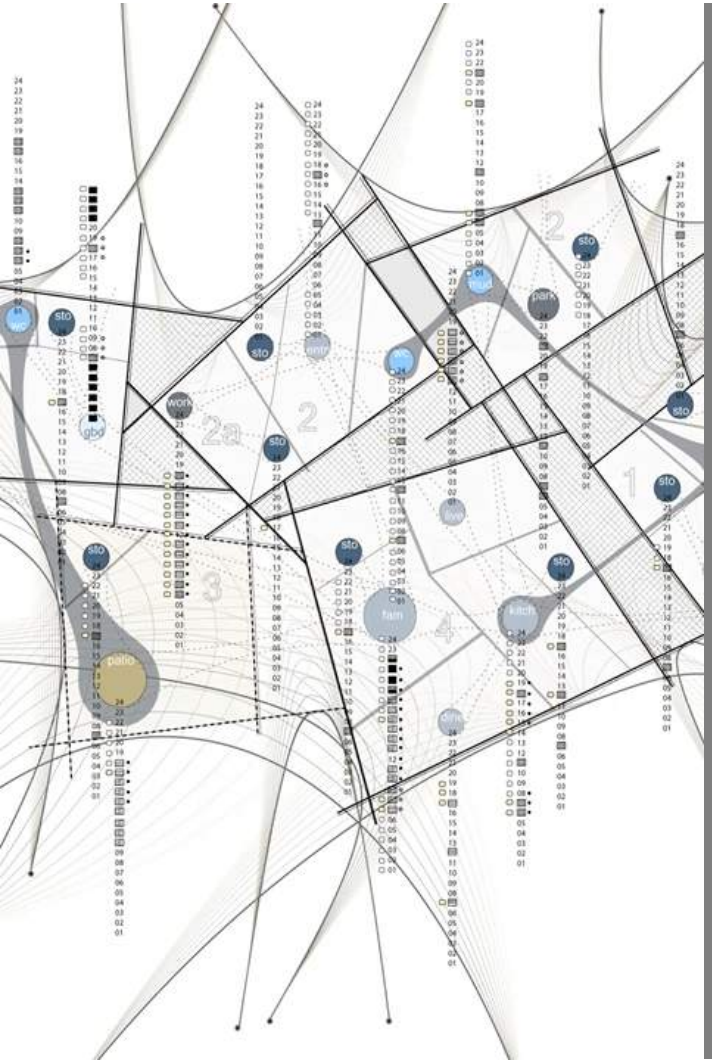
AI in Design

Image to text AI – Reversing design to build AI understanding

- ***Iteration Generation***
- ***Offspring from the initial design***

Source Kory Bieg / OTA + Design



Recommendations moving forward

Recommendations / Questions

1. The education of architects must include a greater understanding of code and programming

Computer Science

Editors of Code

Understanding and implementation of history

Recommendations / Questions

2. Should integrated design (architecture and engineering) be a single practice as AI grows?

AI Engineering within conceptual ideas – lead to automation

Compensation structures when AI is more active

Who owns the algorithms and data set prompts

Areas of Focus

Alternative Delivery

Artificial Intelligence

Long-Term Relevance

Areas of Focus

Dave Gilmore, chairman of Design Intelligence, has a challenge for AIA Florida.

“Will you take the time to, in a unified way, define the matters at hand that are here today and most likely will extend over the next 12 months? Will you allow those to drive your agenda so that you can claim relevance?”

Design Intelligence has several parts: The Design Futures Council, which counts more than half a million people involved with the built environment in North America; DI Research, which researches topics affecting that built environment; DI Strategic Advisory, which works with firms from around the world on growth strategies, transitions and more; DI Leadership Institute, a new, eight-month leadership program; and DI Media, which publishes articles, media, podcasts and more driven by Design Intelligence.

“We have the honor and privilege of being in touch with lots of people,” Gilmore said. “We look at the world of the built environment through different eyeballs. Our views are primarily through the eyes of the investment community.”

Areas of Focus

Using those connections, Gilmore and his team have defined a particular set of matters at hand for the architectural profession.

- The profession is stuck in a fearful, reactive, risk-adverse posture while other stakeholders in the built environment are leaping forward.
- Architects need to expand their vision from designing a building to designing processes.
- The optimization of technology.

For the first thing, he blames the insurance industry.

“They have so much power that they, in an unseen way, drive our behaviors about risk,” Gilmore said. “Those are not the same underwriters as the construction underwriters, often. I wonder why is it that the construction companies are willing to take the risk that they take, which is far more than the risk we take on the architectural side? I wonder what the differences are between their policies and their policies?”

Architects are not taught classes in risk management, leadership, business or any of that, Gilmore said.

“Architects are artists having to do business and construction are businesspeople that chose to do it in construction,” he said. “One is an evil necessity, and one is an essential necessity.”

Areas of Focus

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“Architects are artists having to do business and construction are businesspeople that chose to do it in construction,” he said. “One is an evil necessity, and one is an essential necessity.”

How architects think about risk is reflected in the profession’s contractual instrumentation. Those contracts are often what is holding architects back from ensuring a sustainable value.

“The current profession, if it doesn’t change, will go the way of the dinosaurs,” Gilmore said. He pointed out that AIA contract documents only devoted 35% of the fees to where design thinking can make the most difference. Most of the fees go to drawing lines on paper.

“It is inherently self-defeating,” he said. “Many firms create their own contracts because they’re trying to change and modify this risk-averse context that’s there.”

Furthermore, architects are leaving money on the table. The cost of design-build is only 10% of the cost of the lifecycle of the building and, as soon as that building is built, architects are taking their fee and leaving 90% of the cost on the table.

“The building is organic,” Gilmore said. “It has lungs, it has eyes, it moves and changes over time.”

Areas of Focus

To get that share back and build relevance, architects need to optimize the technology they use, making their processes more efficient, reducing the waste of time, resources and materials.

“Right now, to be honest with you, 25-30% of all projects fail to meet their schedules and their budgets,” he said. “This is just unacceptable.” Gilmore says that architects know a lot of things, but they only know them about an inch deep.

“Architects must become functional polyglots,” Gilmore said. “Architects must – because they used to be, many years ago – be fluent in the language of multiple classes of engineering. They were fluent in the language of construction. They understood how buildings went together and could hold the constructors accountable to that.”

Gilmore blames architectural education. Today’s graduates can operate the technology, but they can’t tell you about the construction of the building.

“It takes more than six months, nine months sometimes to get them functionally billable,” he said. “Shame on us, that that’s the case.”

Schools are more focused on design thinking, he said, sending graduates with design degrees to work for Google, for instance.

Areas of Focus

“There’s a massive gap between the academy and the profession,” he said. “We have to figure out how to close that gap, to share a common language for ultimate effectiveness in the transition from education into practice.”
A common language was a theme in Gilmore’s discussion. A lingua franca with investor-owners and construction firms could place architects at the table for a building’s entire lifecycle. It could result in investments in sustainable, climate-conscious projects.

“We have the data. We have the know-how. We don’t have the language,” Gilmore said. “The lingua franca of architecture is often absent or obtuse to the language of lifecycle and operation.”

As it stands, the architectural profession tends to be more transactional than relational, Gilmore said. Not only are architects giving up 90% of those building costs, but they are also abandoning their influence and relevance. AIA Florida can be a leader in sustainability, he said, as more projects become climate-conscious in a post-COVID world because of a correlation between health and sustainable building.

This could change with a common language and rapport with different professions, which could start with AIA Florida and conversations such as this one. “Languages are a thing we don’t understand well and often misuse,” Gilmore said, talking about the definition of relevance. “Relevance is pertinent to the matters at hand. Relevance means to be observant of and actioning towards the matters at hand.”

Relevance

The profession is stuck in a fearful, reactive, risk-adverse posture, while other stakeholders in the built environment are leaping forward.

Source Design Intelligence

Relevance

Architects need to expand their vision from designing a building to designing processes

Source Design Intelligence

Relevance

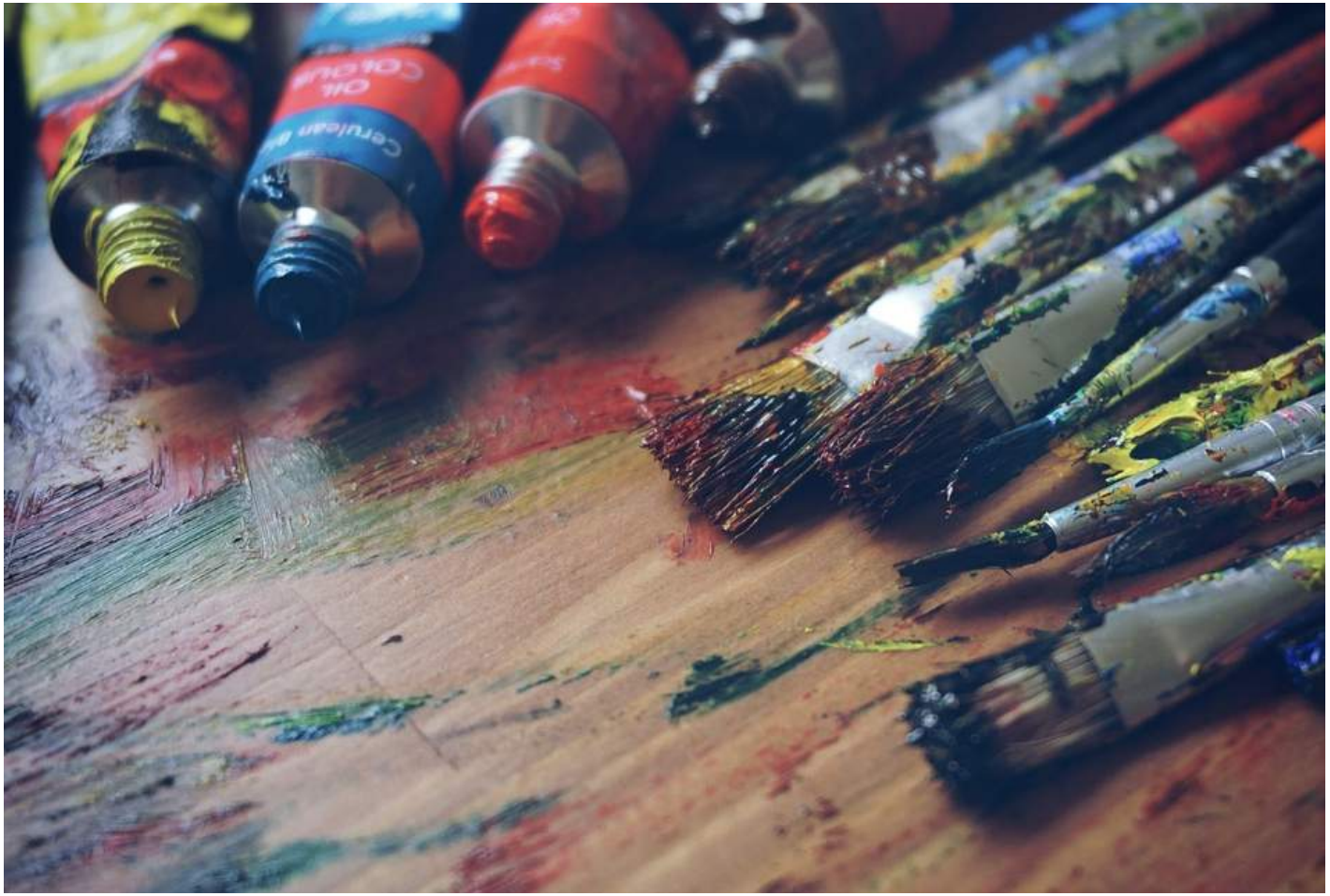
Architects need to leap forward optimizing technology

Source Design Intelligence

Relevance

Architects are artists conducting business.

Contractors are businesspeople working in construction



Source Design Intelligence

Relevance

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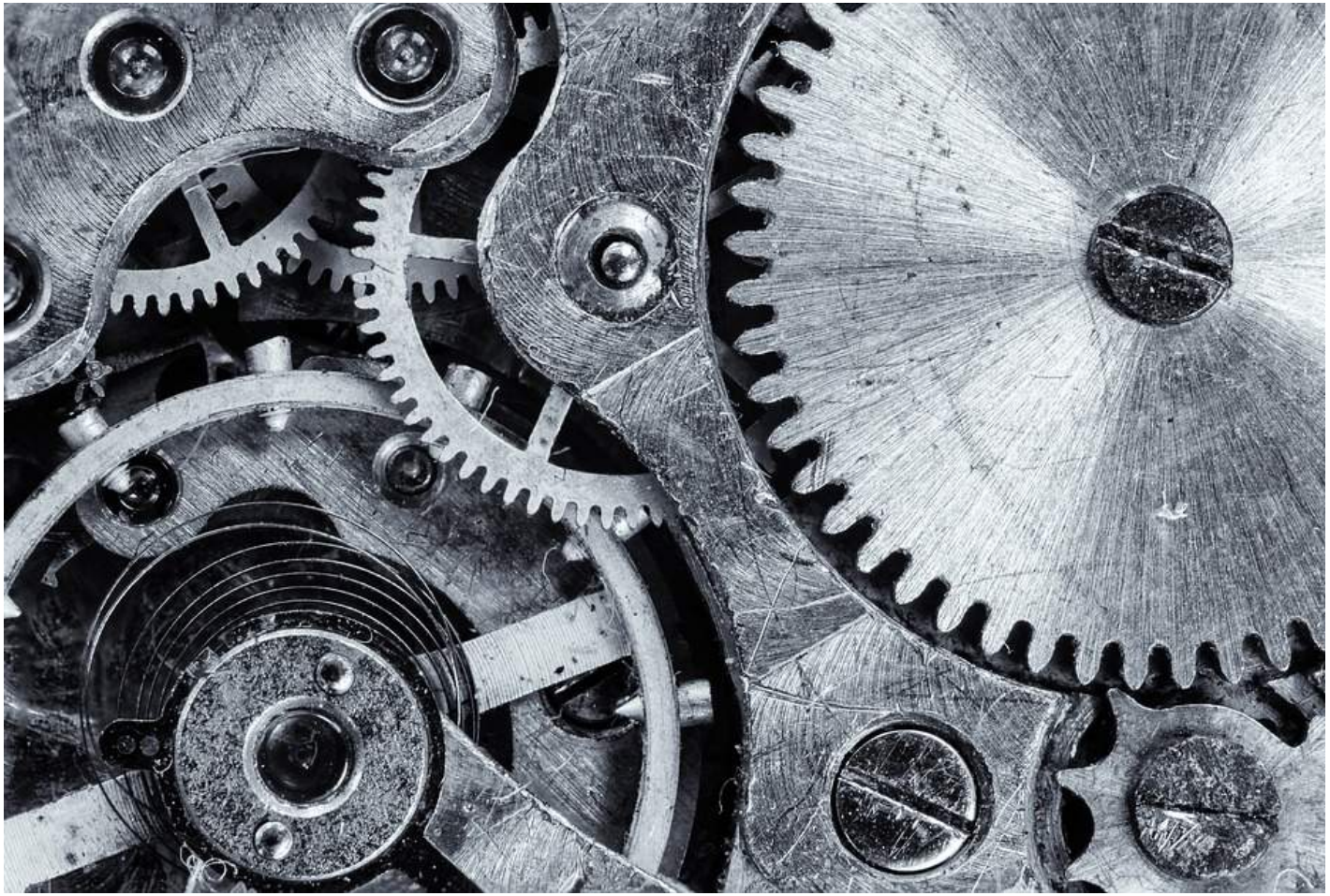

Source Design Intelligence

Relevance

Architects must become polyglots – recapture the master builder knowledge.

Source Design Intelligence

Relevance

Owning the lifecycle and data of the built environment can dramatically alter the practice and relevance of architects.

Source Design Intelligence


“Relevance is pertinent to the matters at hand. Relevance means to be observant of and actioning towards the matters at hand.”
- Dave Gilmore

Recommendations moving forward

Recommendations / Questions

1. The profession needs to look at the existing business model to move from a transactional situation to a true lifecycle relationship

Owning the building data

Leasing data to real estate companies

Recommendations / Questions

2. The profession needs to explore controlling / owning the process of building and operations

Architecture ownership of construction

Ownership structures for royalties

Subscription to building data outputs


“The measure of intelligence is the ability to change.”
- Albert Einstein

AIA Florida

Challenges, Changes and Relevance

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Draft Summary Report

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