HOLISTIC DESIGN WORKFLOWS

DIGITAL INTEGRATIONS, MATERIAL INVESTIGATIONS AND DESIGN METHODOLOGIES

The goal of our study was to create a more efficient and enriching experience among cross-disciplines in the AEC industry. We researched the impact of the strategic implementation of computational design and engineering methodologies on growth and waste.

WHAT IF...

WHAT IF WE RESEARCHED THE POTENTIAL EFFECTS OF ADVANCED DIGITAL TECHNOLOGIES IN THE DESIGN, FABRICATION AND DELIVERY PROCESSES?

THE AIM

We aimed to improve the way architects work with engineers, consultants and contractors at every stage of the design process, by integrating computational techniques within an engineering centered digital environment.

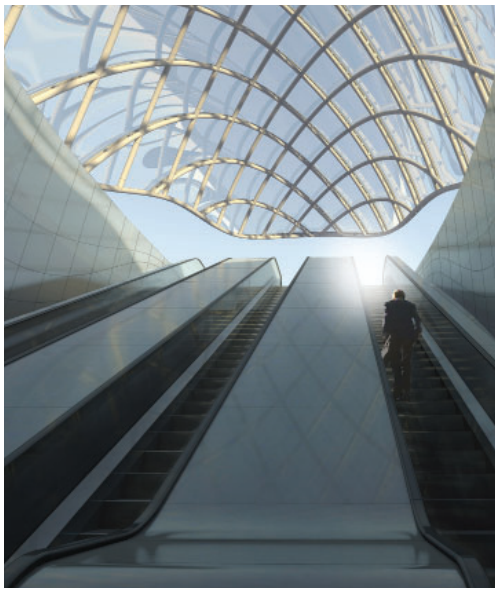
THE APPROACH

We researched other industries that have design, engineering and manufacturing challenges to identify what issues they have in common. We also sought to overcome the challenges of interoperability by creating a singular design and engineering experience across projects.

WHAT WE DID

We performed an extensive literature review of engineering and analytical methods. We then analyzed existing, proven approaches that infuse architecture with innovative solutions.

We used that information to design a pilot project, the Pavillon de L'eau, a Metro station canopy in Washington, D.C.



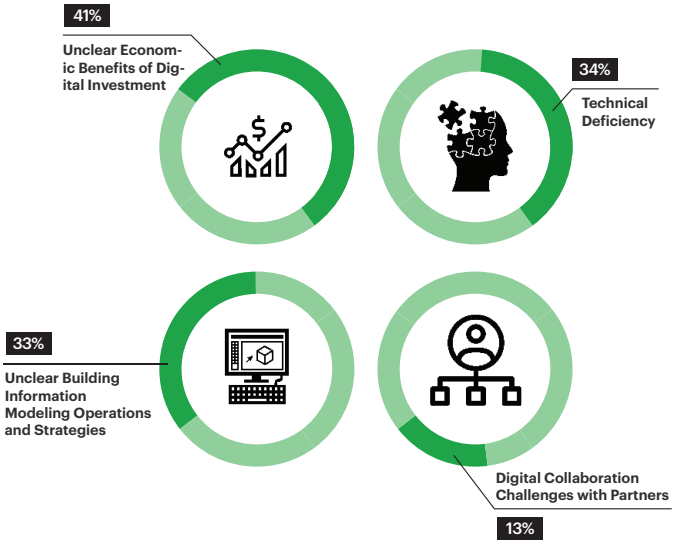
About the Idea Fellowship: The Idea Fellowship exists to incite curiosity and exploration. Launched in 2015, the fellowship gives recipients one year and 800 hours to answer a question that begins with, "What if..."

The Research Team:
Daniel Inocente (Washington, D.C.)
Kevin Vandeman (Washington, D.C.)

Learn More: Click here to learn more about this HKS research project.

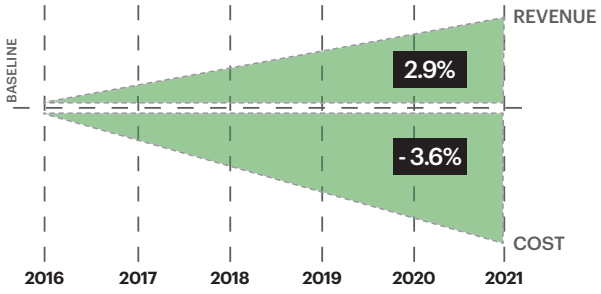
DIGITAL CULTURE

A survey conducted by PwC with over 2,000 companies in the construction industry.



DIGITAL TECHNOLOGIES PERFORMANCE IMPACT

Survey by PwC indicates that over the next 5 years, 2,000 companies expect to reduce costs by an average of 3.6% and have an increase in annual revenues by an average of 2.9% due to advanced digitization technologies.



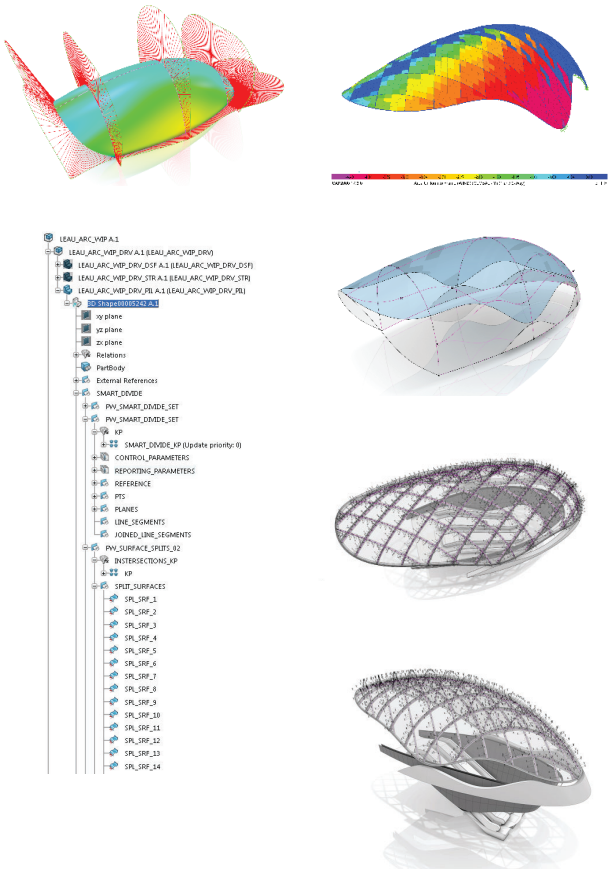
2,000 Participants

26 Countries

75% Expect Reaching Advanced Digitization Levels by 2020

33% Indicate Advanced Digitization Levels

DESIGN & ENGINEERING
PARAMETRIC ENVIRONMENT, SCRIPTING + AUTOMATION, ANALYSIS



WHAT THE FINDINGS MEAN

The use of next generation platforms and tools had a significant impact on the design of Pavillon de l'eau.

The behavior of a parametric and engineered design optimized the collaborative effort.