DISRUPTION

Robert Otani, PE
Chief Technology Officer
Visit the Kodak World’s Fair Pavilion and explore the exciting world of photography!

- See the world’s largest outdoor color prints.
- Visit 3 theatres -- over 30 exhibits.
- Get personal tips on how to take good pictures.

Kodak Pavilion – World’s Fair

SHED – DSR/Rockwell Group

Vessel – Heatherwick Studios

Pittsburgh Airport - Luis Vidal + Architects & Gensier-

Confidential $1.5 billion project
CORE Organization

- Steering Committee
- CORE
- TTWiiN/TTWiiN IP
- Incubator
- Accelerator

- CORE lab
- CORE studio
- CORE AI

Intellectual Property
General R&D
Adjacent to Transformational

Efficiencies
Applications Development
AEC R&D, CORE Modeling

Automation
Artificial Intelligence
Automation
TTWiiN
Accelerator
Multi-Physics Solver

BIM INTEROPERABILITY PLATFORM

TUNED LIQUID DAMPER

SHOCK AND VIBRATION MOUNTS
CORE is a FIRMWIDE ecosystem!

CORE = CORE studio + CORE Lab + CORE Reps + CORE.AI

CORE Modeling Service
  Apps Dev
  AEC R&D

General R&D
Adjacent to Transformational

Artificial Intelligence
Automation

Office by Office
Knowledge Transfer
Idea Generation
AEC
Disruption
tech disruption

Robert
- the industry is already disrupted...

Nate
- education that focuses on becoming better
- problem-solving talent
- staff who are positive, fearless, and able to provide critical feedback

Michael
- even in a technologically saturated world, craft is still alive and well...

R&D
- focuses on solving problems and finding better ways to improve the world...

Dave
- the number 1 challenge coming from aircraft graduates, is the understanding of how buildings go together...

Christopher
- the recession created a huge knowledge gap in construction/detailing expertise - the challenge is in in-house knowledge management...

R&D
- core studio working to shift the time investment from documentation to design, from cost to profit...

R&D
- how can we build in resiliency in our business? - do we create artificial constraints? - are we adaptive to changes in our business and world? - do we seek new methods and tools? - are we building fluency and capability in our staff? - transfer knowledge
WHY CHANGE IS NECESSARY...TECHNOLOGY HAS NOT BEEN KIND TO AEC

Overview of productivity improvement over time

Productivity (value added per worker), real, $ 2005

$ thousand per worker

Source: Expert interviews; IHS Global Insight (Belgium, France, Germany, Italy, Spain, United Kingdom, United States); World Input-Output Database

McKinsey&Company
PROJECT MANAGER’S “SHELF LIFE” OF PROCESS IS SHORTENING
TECHNOLOGY HAS “DISRUPTED” COMMUNICATION

COMMUNICATION IS LEARNING

Time consuming, misleading, not very effective, not personal
GENERATIONAL TECHNOLOGIES HAS “DISRUPTED” COMMUNICATION

COMMUNICATION IS LEARNING

Problem #1: Conflicts Over Channels of Communication

Have you had trouble reaching a Millennial coworker? Turn to the web. Millennials, as a rule, are almost always online. Oddly enough, their comfort with technology itself can be a barrier to communicating. They can be awkward with direct personal communication because of it.

Experts say you need to take care with the words you use, in person or electronically when communicating with Millennials. What you say and how you say it are important. Millennials tend to be idealistic, requiring prompt feedback and meaningful interaction. Conversely, Gen Xers tend to be blunt and direct, talking in short sound bites.

It’s easy to see the trouble here. Say a Gen X employee keeps leaving voicemails for a Millennial coworker. And the Millennial responds only by text. The inability to have a verbal conversation irritates the Gen Xer. And repeated voicemails that a short text could address frustrate the Millennial, causing frustration out of cultural preferences.

A Different Focus

Millennials tend to be short-term focused, seeking immediate rewards and generally expecting fast promotions. They tend to care about protecting the natural world, seek a healthy work environment and demand much more attention and recognition, alongside more flexibility and a more favorable work-life balance than previous generations. They also demand a different quality of relationship with managers and want training and professional development opportunities while demanding to be challenged.

Baby Boomers, on the other hand, are more traditional in their approach to work. They tend to be more dedicated to their jobs, with ambitious, clear goals and are less sensitive to life balance issues, waiting longer for promotions without requiring constant feedback.

These different perspectives create potential risks to a productive work environment as job expectations and parameters can collide.

Mind the Gap: Millennials vs Generation X and Baby Boomers

Millennials, together with generation X, are quickly becoming the largest working demographic globally, nearly on par with baby boomers, and in many parts of the world, already outnumbering them. Gaps in communication and suboptimal working relationships can be avoided by bridging the generations proactively.
TECHNOLOGY HAS “DISRUPTED” HOW WE PRODUCE DOCUMENTATION

WHY? BECAUSE THE TOOLS ALLOW IT, IT’S COOL, LOOK HOW SMART I AM!

NET EFFECT? LESS THINKING, WASTED TIME/MONEY, TOO FAR IN FRONT OF THE ARCHITECT

![Diagram](Thornton Tomasetti)
BUILDING TECHNOLOGY HAS “DISRUPTED” OUR SCOPE

2005 – RESIDENTIAL HIGH RISE 20 STORIES

• SYSTEM = CONCRETE

2019 – RESIDENTIAL HIGH RISE 20 STORIES

• SYSTEM = CONCRETE, STEEL, HYBRID, LIFT, TIMBER, DIVERSAKORE, PRECAST/STEEL, GIRDER SLAB?
THE STANDARD OF CARE OF OUR DELIVERY HAS NOT CHANGED BUT OUR PROCESS TO THE STANDARD OF CARE HAS CHANGED RADICALLY

• DELIVERY = 2D

• PRACTICE = 2D AND 3D

BIM HAS ALLOWED ARCHITECTS TO CHANGE INDISCRIMINATELY BECAUSE BIM MODELS CHANGE/UPDATE AUTOMATICALLY….BUT ENGINEERING ANALYSIS DOESN’T 😞
THE PROMISE OF BIM WILL NEVER BE REALIZED WHEN THE STANDARD OF CARE IS ARCHAIC
2D DRAWINGS ARE REPRESENTATIONS OF THE 3D OBJECTS USING SYMBOLOGIES TO INTERPRET 2D TO 3D WITH SYMBOLS AND NOTES TO INTERPRET LINES AND ANNOTATIONS TO CONSTRUCTION OBJECTS

PLANS SHOW SIZES, DIMENSION, MATERIALS, FORCES, METADATA, ETC
BUT WAIT, WE ALREADY HAVE ALL THAT INTELLIGENT INFORMATION EMBEDDED IN THE 3D BIM MODEL
AND WE CAN SEAMLESSLY SHARE THE MODEL TO ANY COLLABORATOR IN A DATA CENTRIC WAY
KONSTRU
one platform to accelerate BIM

Weiss Manfredi
TATA Innovation Center
WE CAN SEAMLESSLY SHARE THE 3D MODEL IN A DATA CENTRIC WAY
VIP ROUNDTABLE

DIGITIZATION OF DELIVERABLES

CORE studio
Chris Sharples – SHoP
Tim Logan – HKS Line
Murali Selvaraj – P+W
Michael Hodge – TVS Design
Kare Poulsgaard – 3XN
Alexandra Pollack – FXCollaborative
Pierce Reynoldson – WeWork
Cliff Goldsmith – Suffolk Construction
Zak Kostura – ARUP
Scott Allen – Seven Valleys
Islay Burgess – Gensler
James Wynn – Gensler
Brian Gillespie – Robert McNeel
Nicholas Cameron – P+W
Gus Sirakas – NYCDOB
Marios Tsiliakos – Foster & Partners
Byron Mardas – Foster & Partners
Dennis Shelden – Georgia Tech
Scott Lomax – Thornton Tomasetti
TECH DISRUPTION SNUCK UP ON US

Evolution of process / delivery

- Hand
- CADD
- BIM

- Time
- # of Drawings
- Value of Data
- Construction Productivity
BIM Power
THE POWER OF BIM AND AUTOMATION IS IMMENSE
Planar sections for cold-formed steel trusses

CORE modeling
THE POWER OF BIM AND AUTOMATION IS IMMENSE

CORE modeling
THE POWER OF BIM AND AUTOMATION IS IMMENSE

CORE modeling
THE PROMISE OF BIM WILL NEVER BE REALIZED WHEN THE **STANDARD OF CARE IS ARCHAIC**

2019 MODEL
CORE.AI
Can we make an app that leverages the experience of 1000 engineers and applies it in seconds?
What if the entirety of your firms’ knowledge was accessible to every employee in an app?
Thanks