The New AEC Industry: How to Survive in the New Information Age

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Design Application Specialist
CannonDesign

Class summary

Our industry has changed. New tools are challenging the traditional design process and impacting our cost structures. At the same time, a wave of Millennials and Generation Zers are entering the workforce and changing corporate cultures everywhere. They bring with them a mindset revolving around access to their work from anywhere, a warehouse of new customized tools, and an open-source mindset of collaboration and co-opitition. All the while, the entire environment around us is becoming more connected through the Internet of Things, and bombarding us with more and more data. How will the architecture, engineering, and construction industry adapt to such drastic change? Do you have the skill sets needed to survive in this new age?

Key learning objectives

At the end of this class, you will be able to:

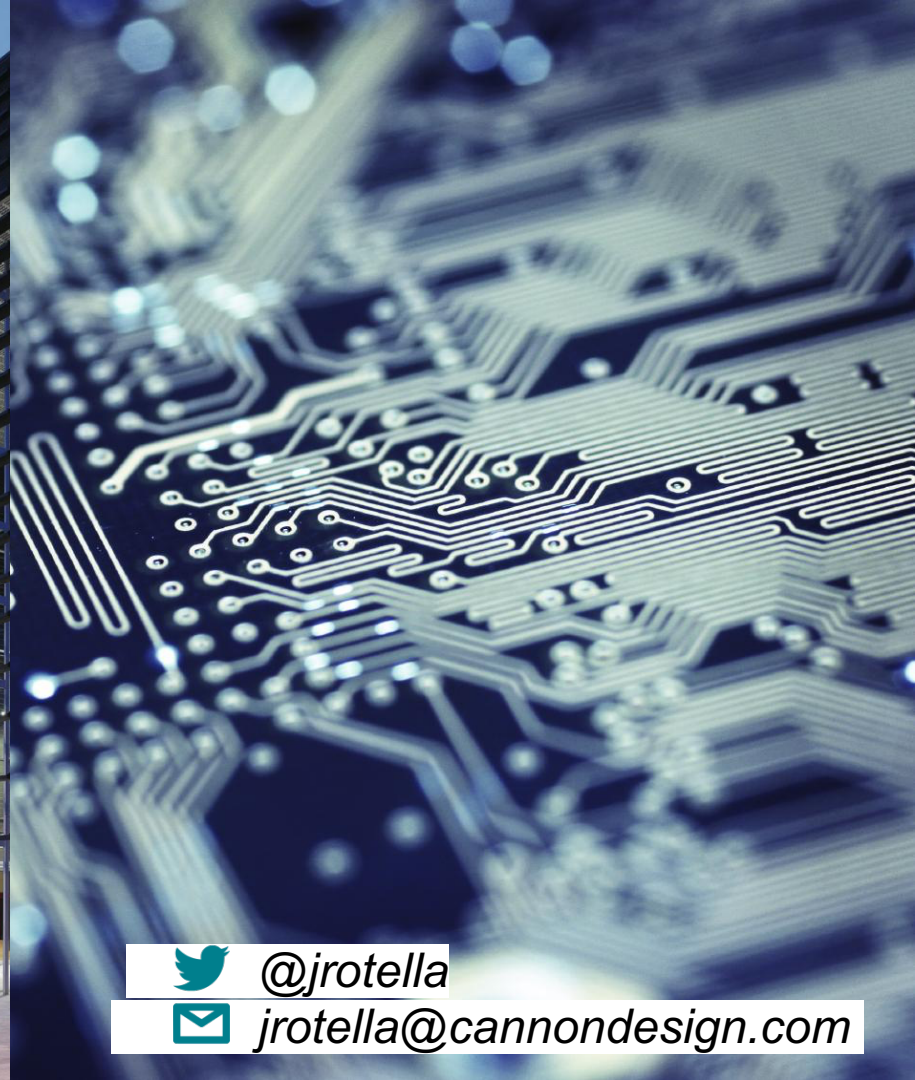
- Learn how to adapt your workflows to the new tools that are changing our traditional design process
- Learn how to partner with Millennials and Generations Zers to advance your corporate culture
- Understand the technology that's available today that enables design collaboration and access from anywhere with an internet connection
- Find out why you should be experimenting with IoT and big data today

I'm **Jimmy Rotella**

I live at the Crossroads of

Architecture &

Technology



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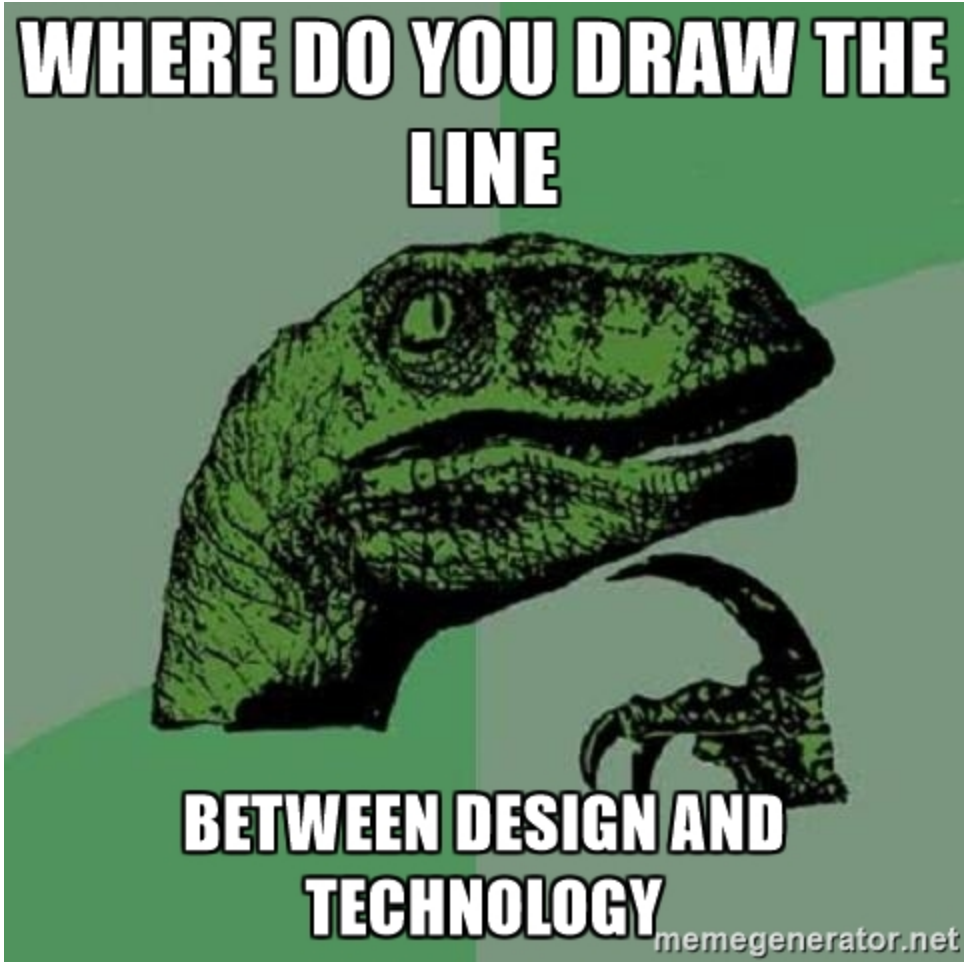
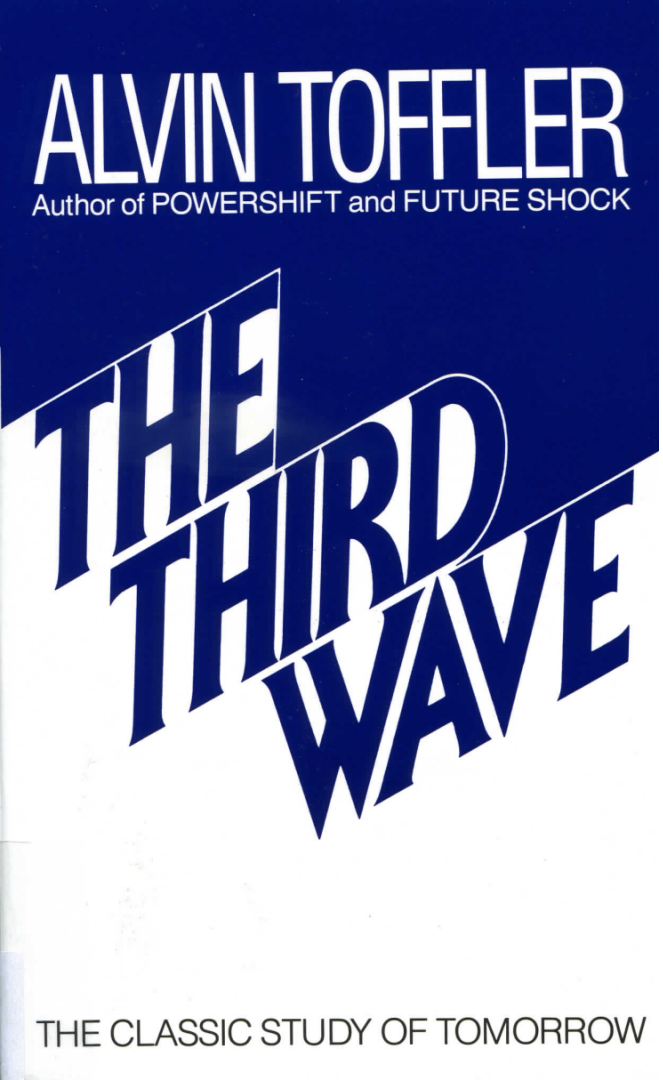

WHERE DO YOU DRAW THE LINE
BETWEEN DESIGN AND TECHNOLOGY
memegenerator.net



The Third Wave

Alvin Toffler

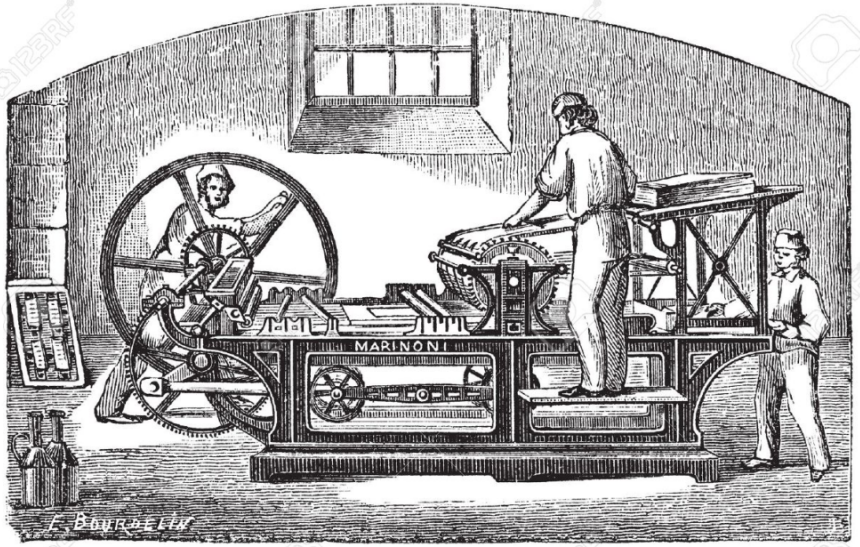
1980

The First Wave

Agriculture

~10,000 years ago

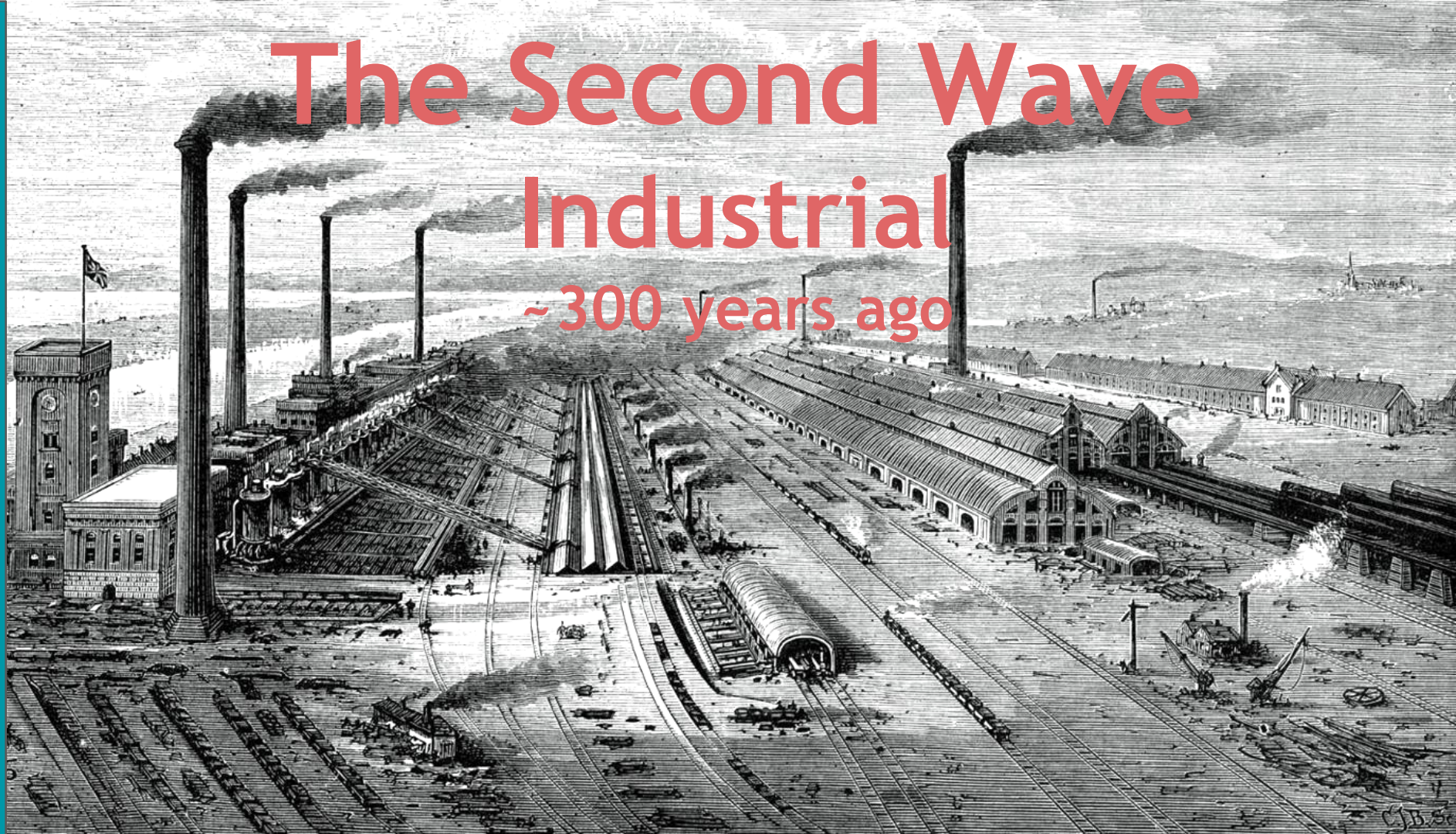
First Wave was dominant until around 1650-1750

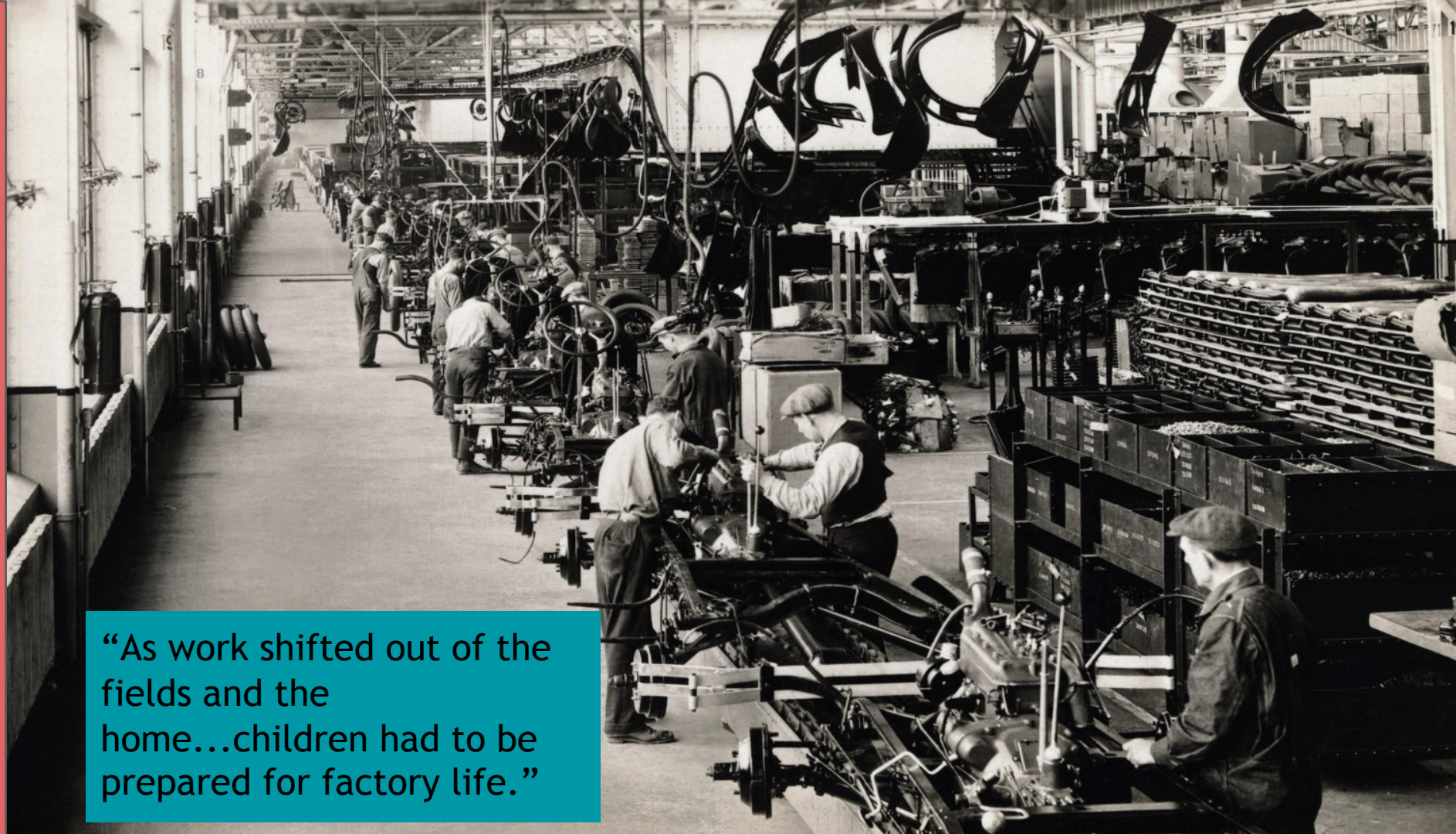


The Second Wave

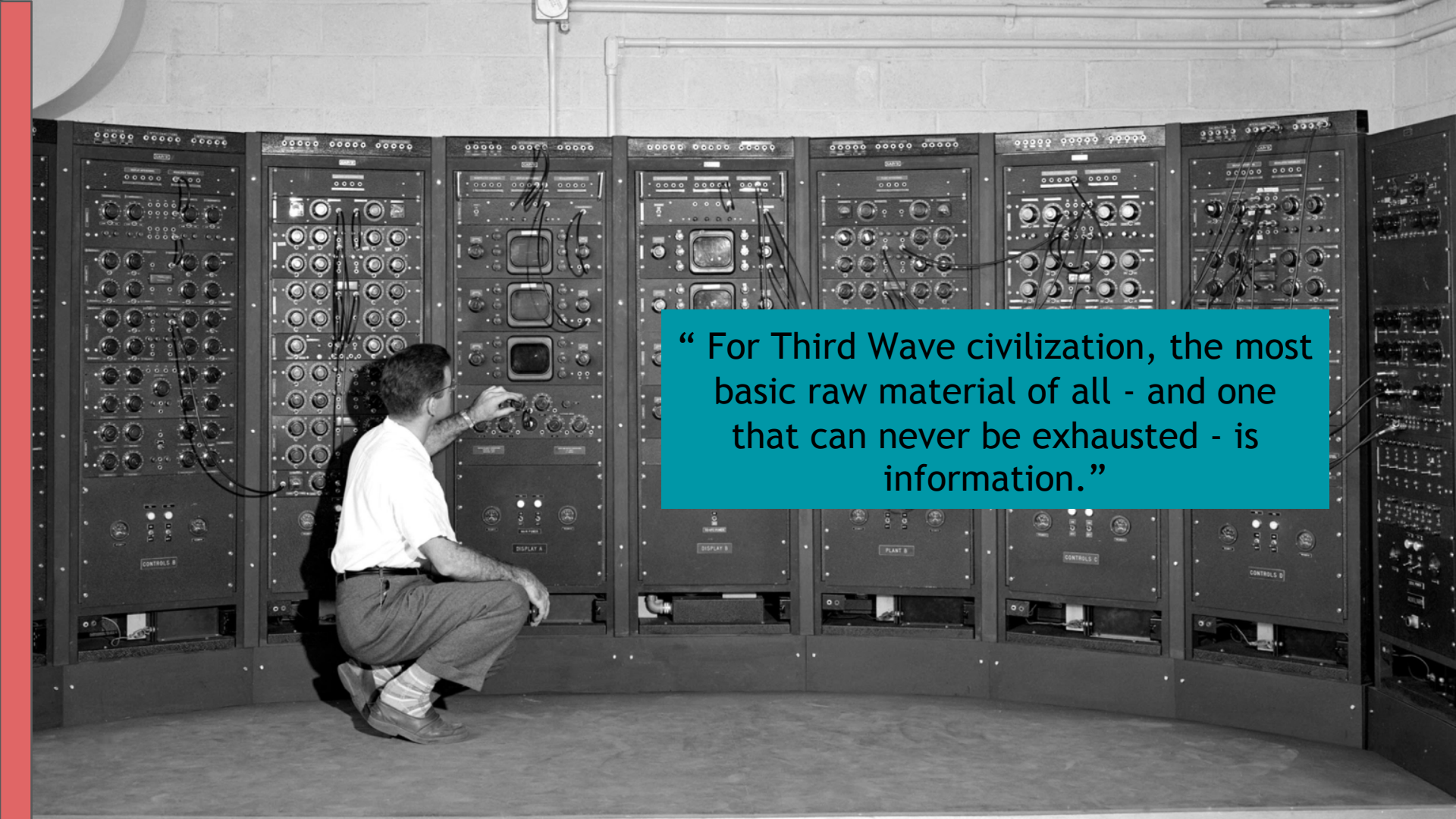
Industrial

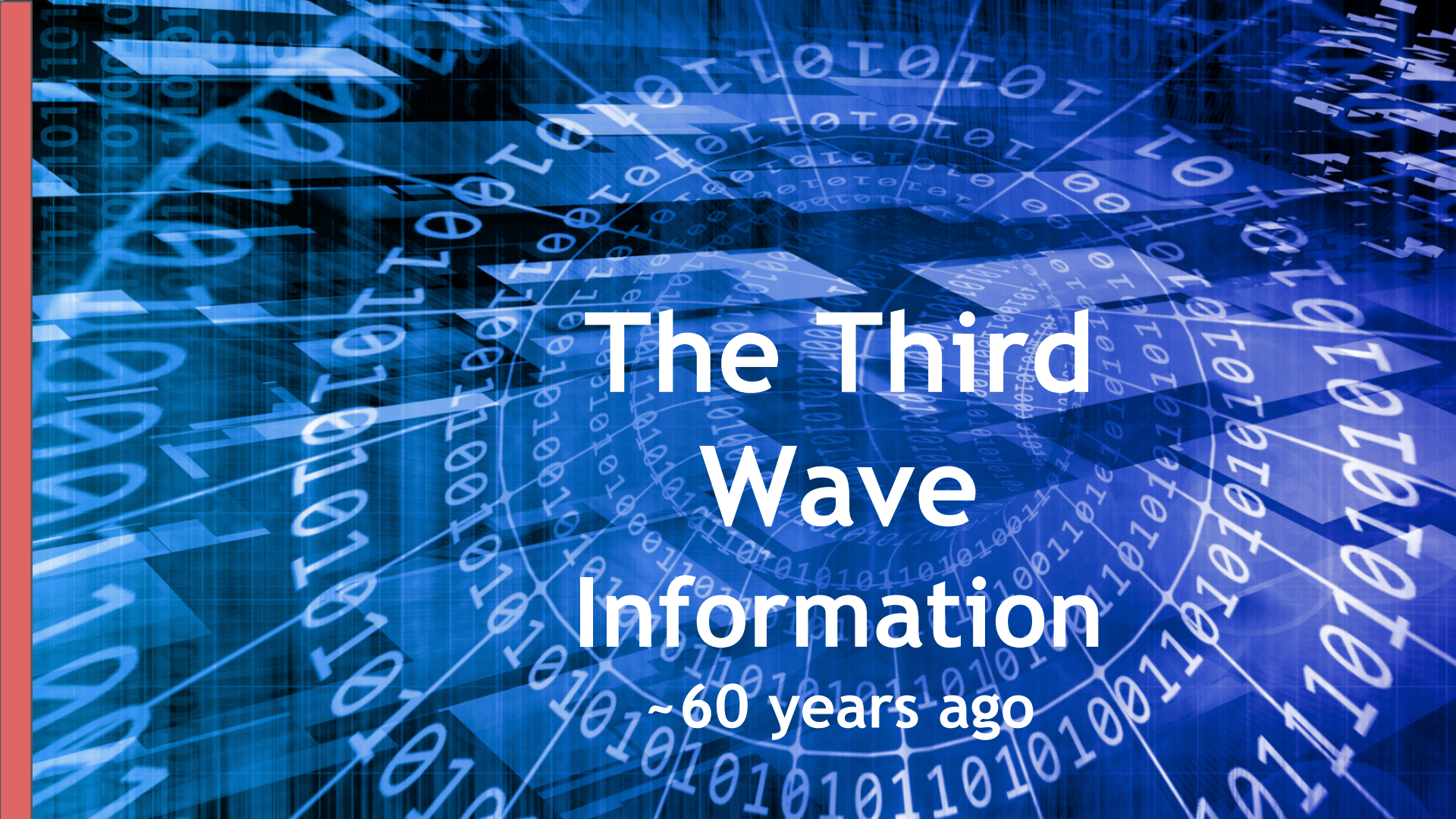
~300 years ago





“As work shifted out of the fields and the home...children had to be prepared for factory life.”


“ For Third Wave civilization, the most basic raw material of all - and one that can never be exhausted - is information.”


The Third Wave
Information
~60 years ago

"We are the final generation of an old civilization and the first generation of a new one; much of our personal confusion, anguish, and disorientation can be traced directly to the conflict within us...between the dying second wave civilization and the emerging third wave."

Key traits which will be valued in the Third Wave

Education will become interspersed and interwoven with work, and will be spread out over a lifetime.

On the job, the ability to accept responsibility, to adapt swiftly to change, and to be sensitive to fellow workers will be prized.

Successful people will be complex and individualistic.

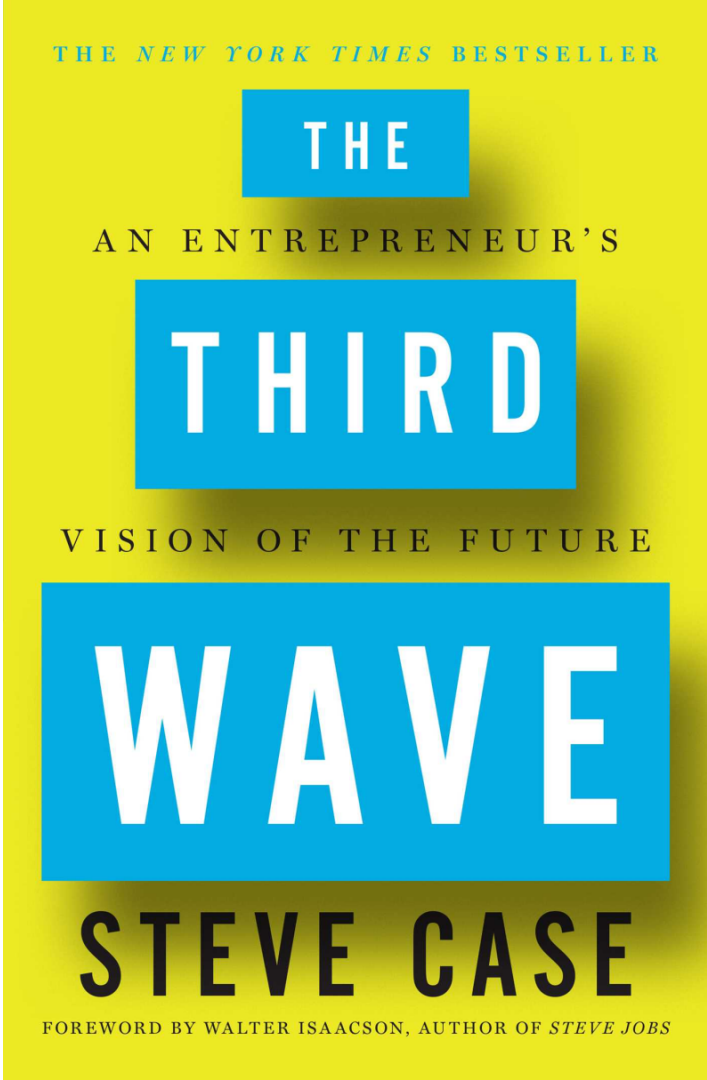
Blind obedience on the job will be penalized. Independent thinking, questioning of authority, talking back will be rewarded.

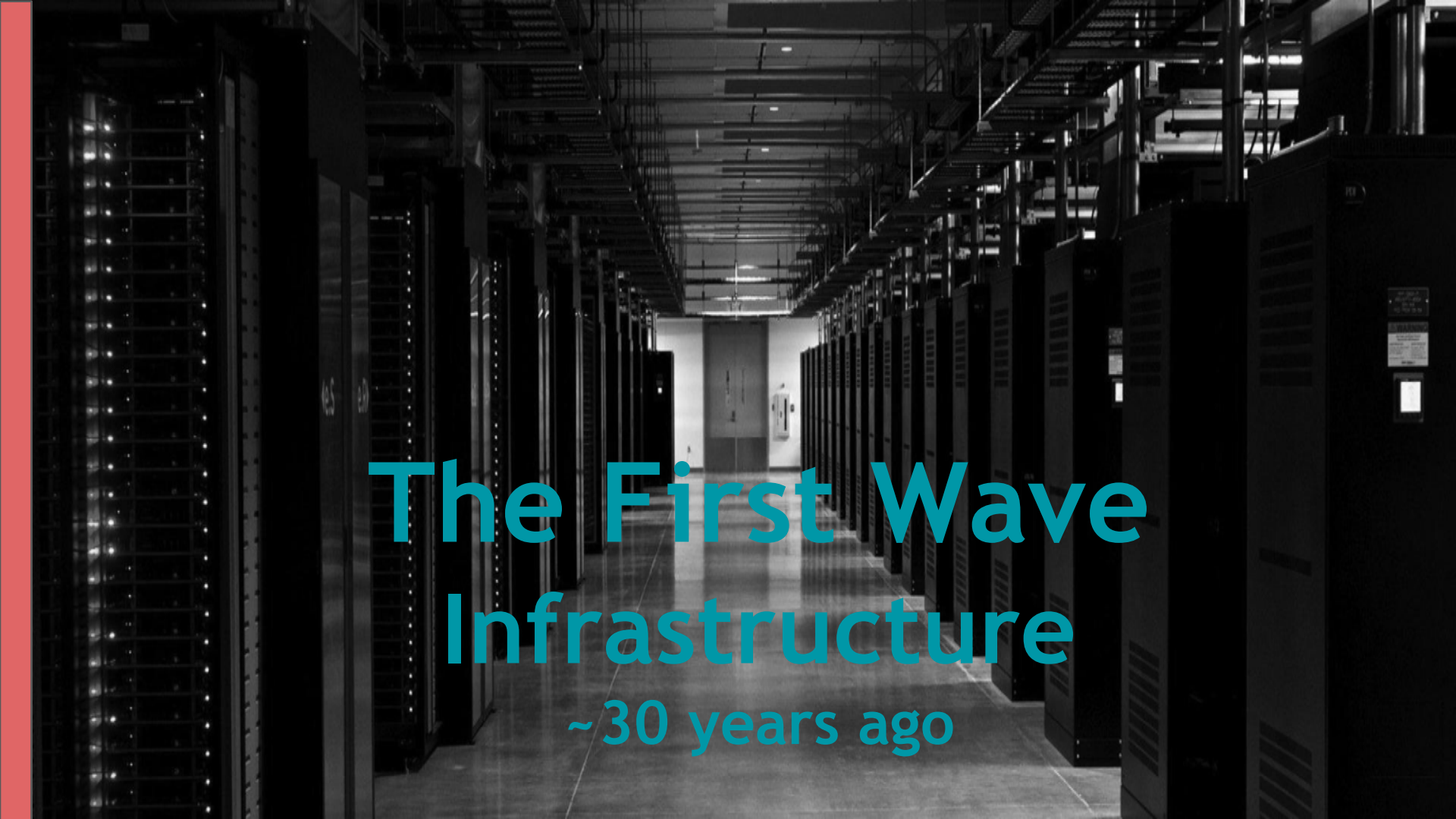
Self-reliance, and the ability to do things with one's own hands will become prestigious.

The Third Wave

Steve Case

2016




The First Wave
Infrastructure
~30 years ago

The Second Wave
Apps and Services
~15 years ago

The Third Wave
Internet of Everything
~today and beyond

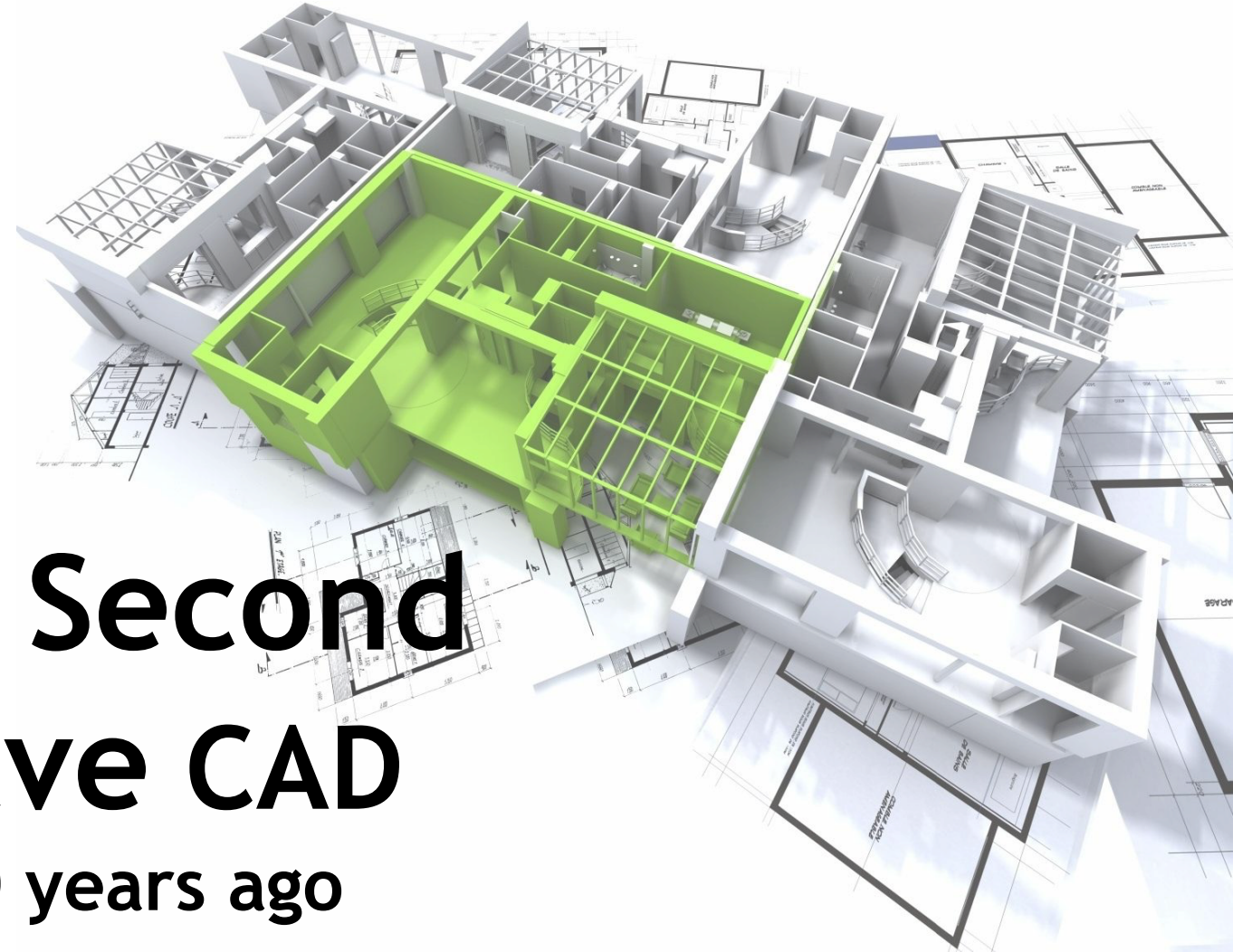
"I HAVEN'T MUCH EXPERIENCE OF SUCH AN EARLY VERSION OF AUTOCAD"

The First Wave

Drafting

~3900 years ago

key innovations leading to the second wave

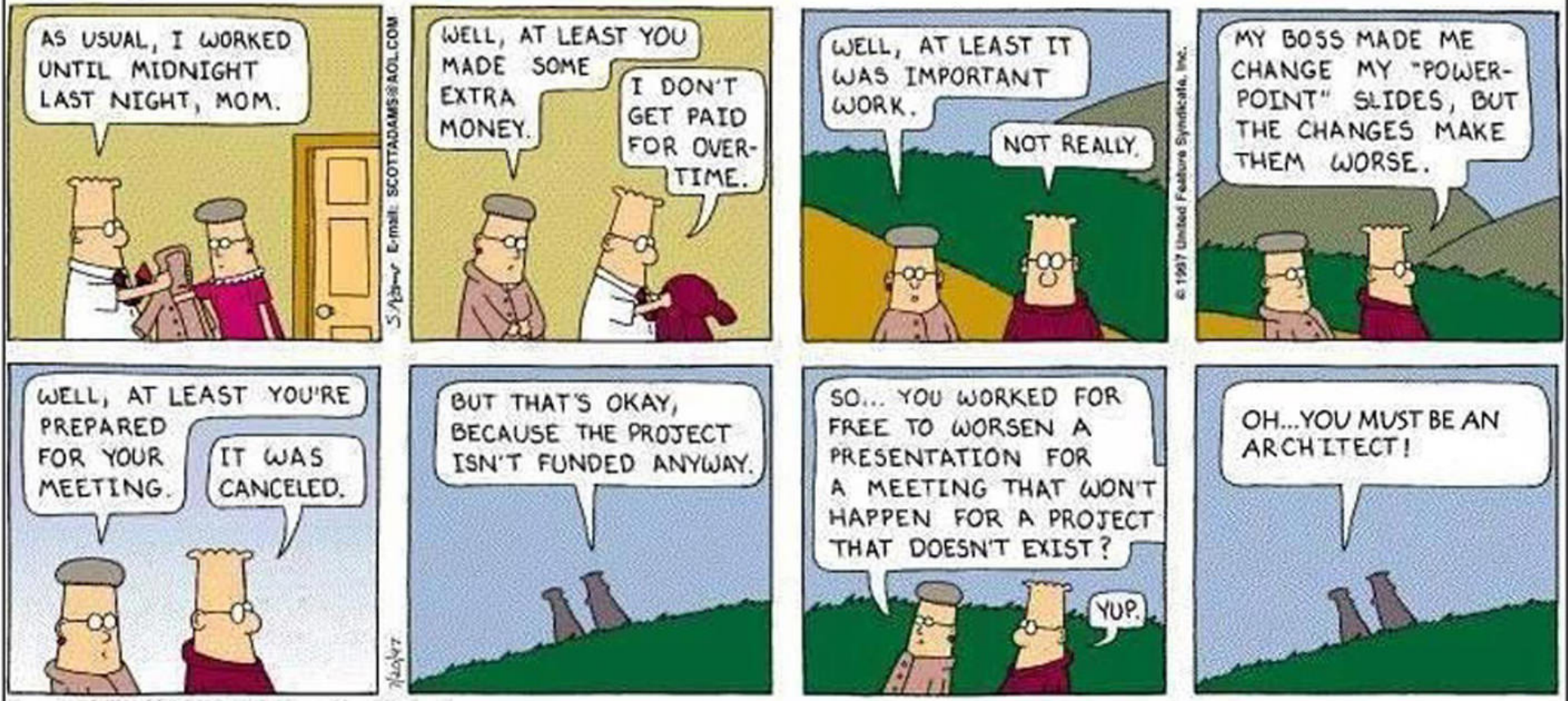


The Second Wave CAD

~40 years ago

DILBERT

BY SCOTT ADAMS



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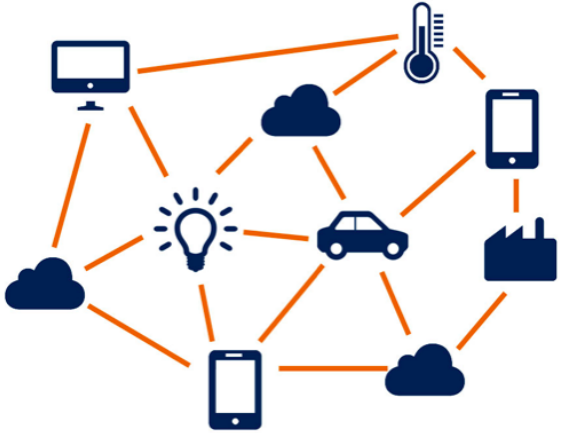
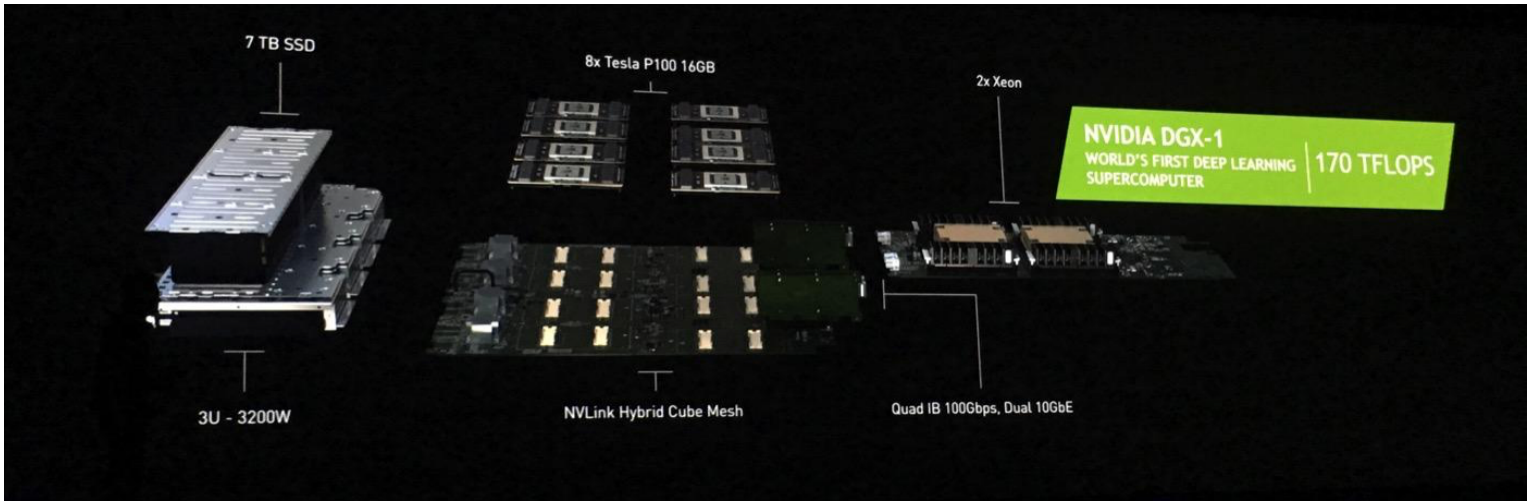
key innovations leading to the third wave





The Third Wave
Integration & Collaboration
~today and beyond

Mobile computing

POWERED BY
NVIDIA GRID™

VIRTUAL MACHINE

Windows 7

Apps

NVIDIA GRID Enabled
Virtual Desktop

NVIDIA Driver

NVIDIA GRID ENABLED
Hypervisor

NVIDIA GRID GPU

VIRTUAL DESKTOPS

Work from
anywhere

Office 365

Revit in the cloud?

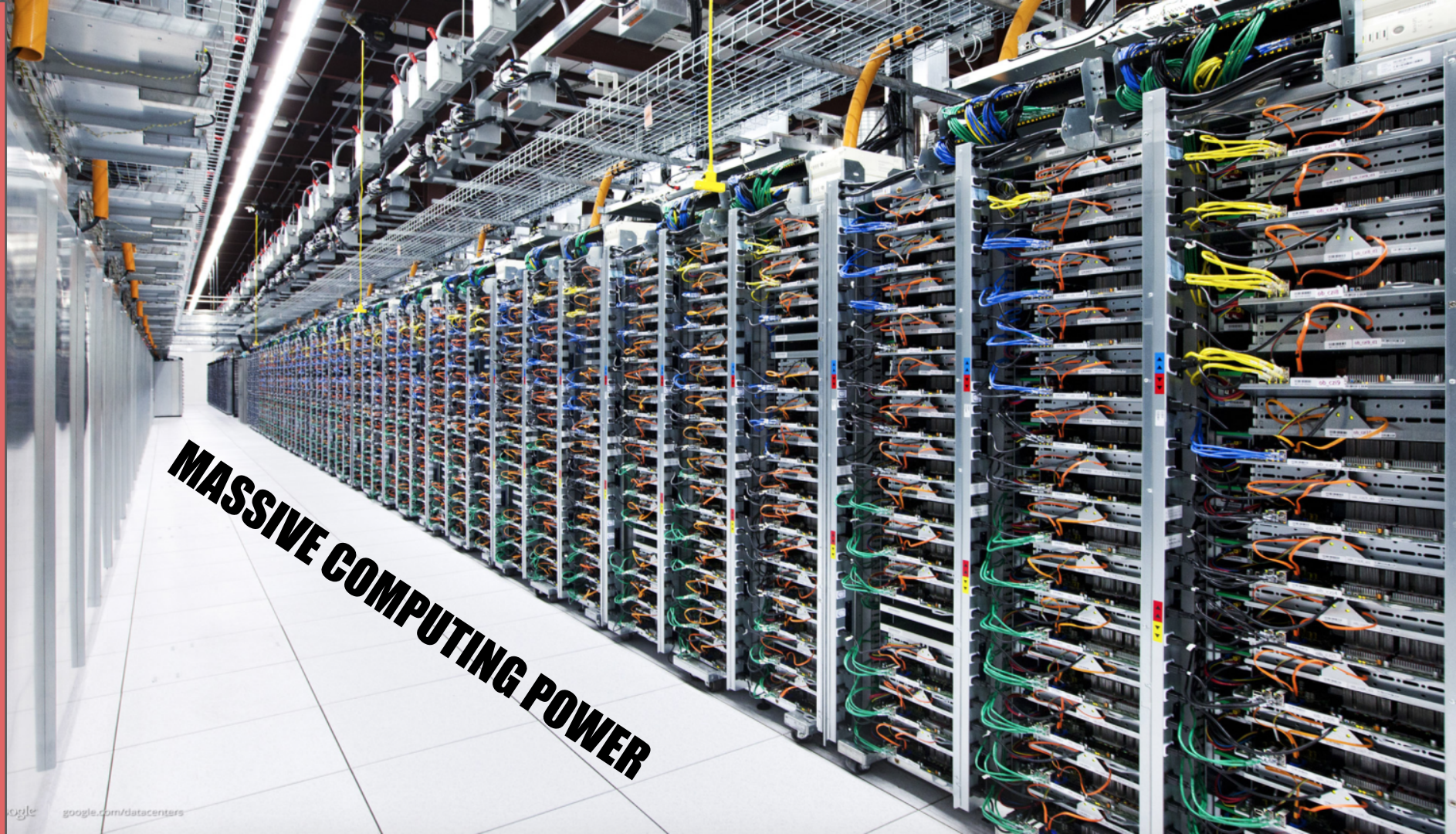
FRAME

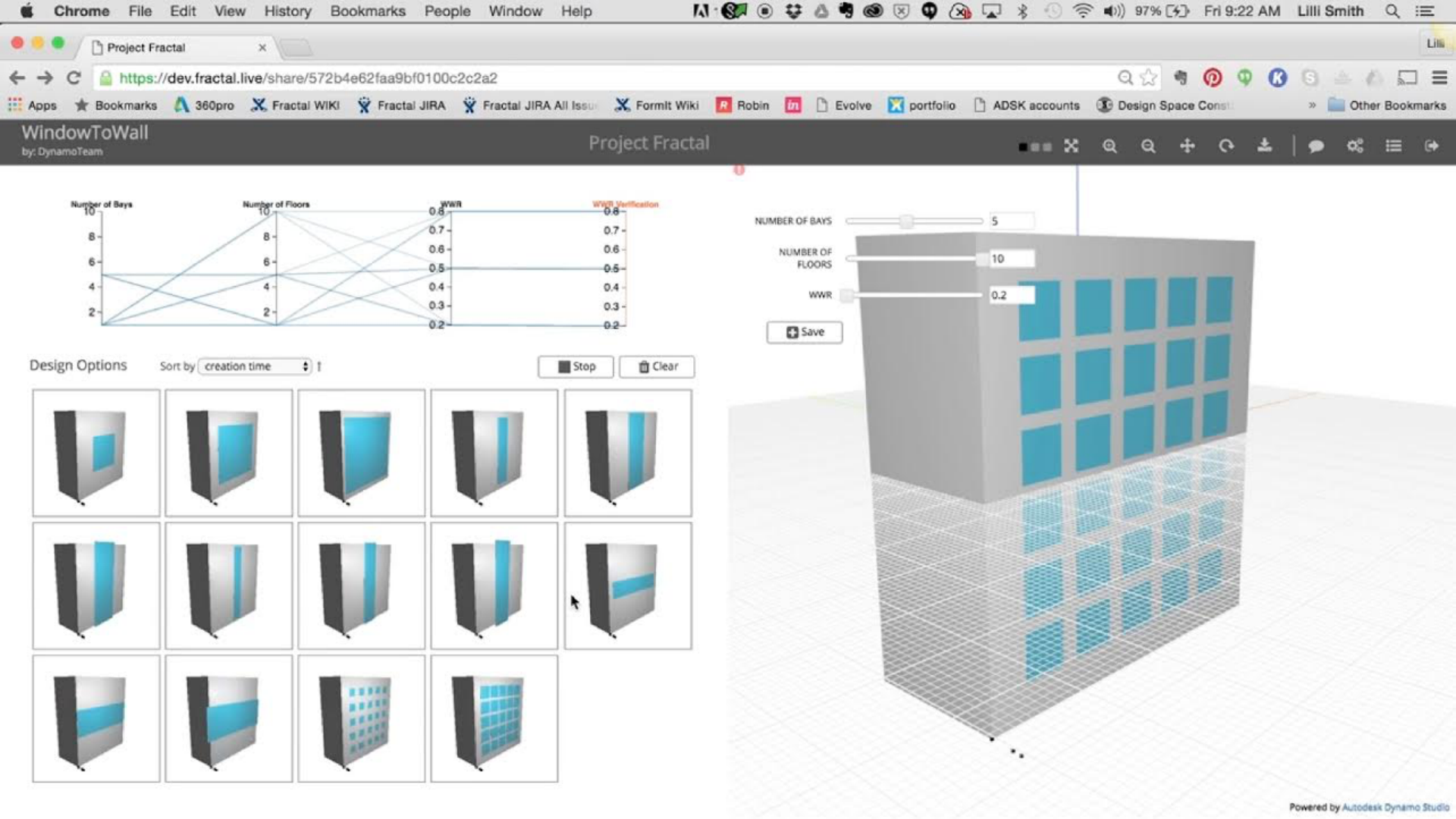
Build in the cloud

Run Autodesk Revit® in a browser.

CLICK TO RUN

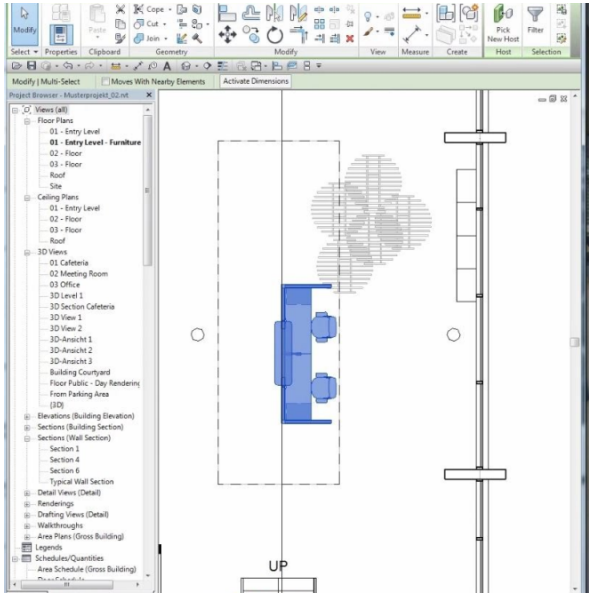
or open a free account at www.fra.me
to run any software on the cloud

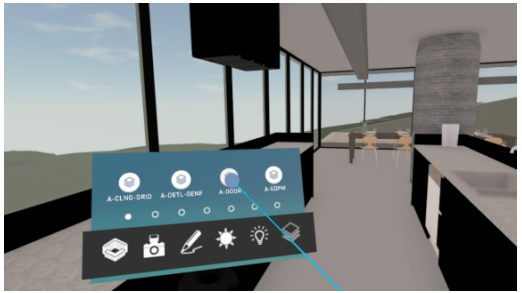

MASSIVE COMPUTING POWER
google.com/datacenters

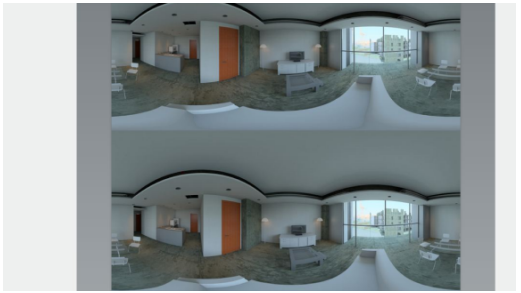

Chrome File Edit View History Bookmarks People Window Help
97% Fri 9:22 AM Lilli Smith
Project Fractal
https://dev.fractal.live/share/572b4e62faa9bf0100c2c2a2
Apps Bookmarks 360pro Fractal WIKI Fractal JIRA Fractal JIRA All Issu FormIt Wiki Robin Evolve portfolio ADSK accounts Design Space Const Other Bookmarks
WindowToWall
by: DynamoTeam
Project Fractal
Number of Bays
Number of Floors
WWR
WWR Verification
Design Options
Sort by creation time
Stop
Clear
NUMBER OF BAYS 5
NUMBER OF FLOORS 10
WWR 0.2
Save
Powered by Autodesk Dynamo Studio

Virtual Reality

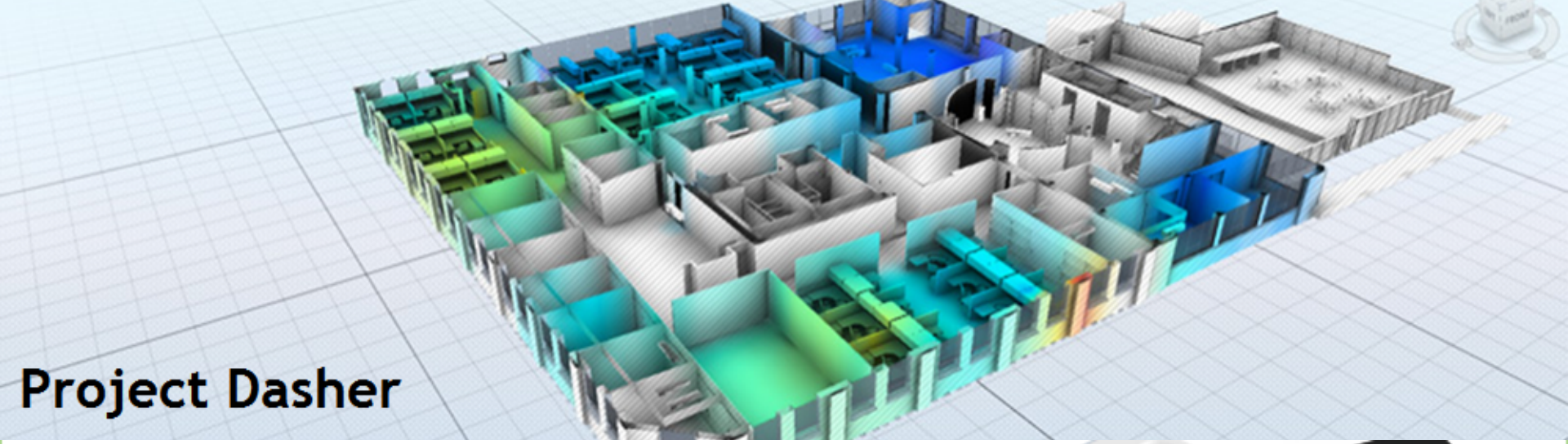
Enscape, Iris VR, Autodesk 360 cloud render







BIG data



Project Dasher

The Hitchhikers Guide to iBeacon Hardware.

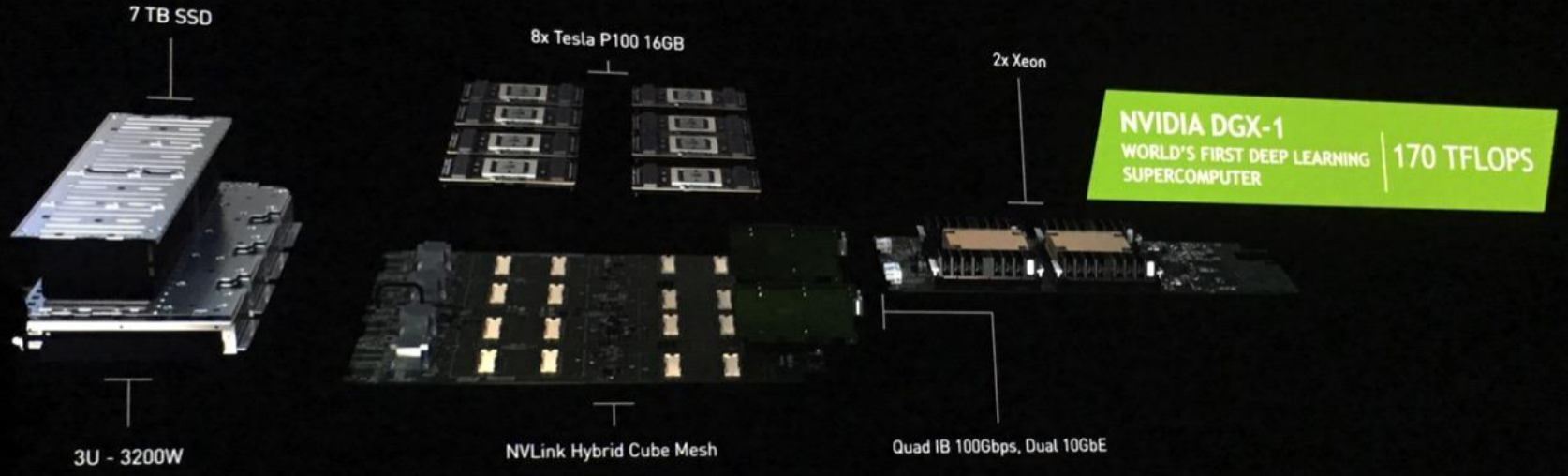
A Comprehensive Report by Aislelabs

Aislelabs

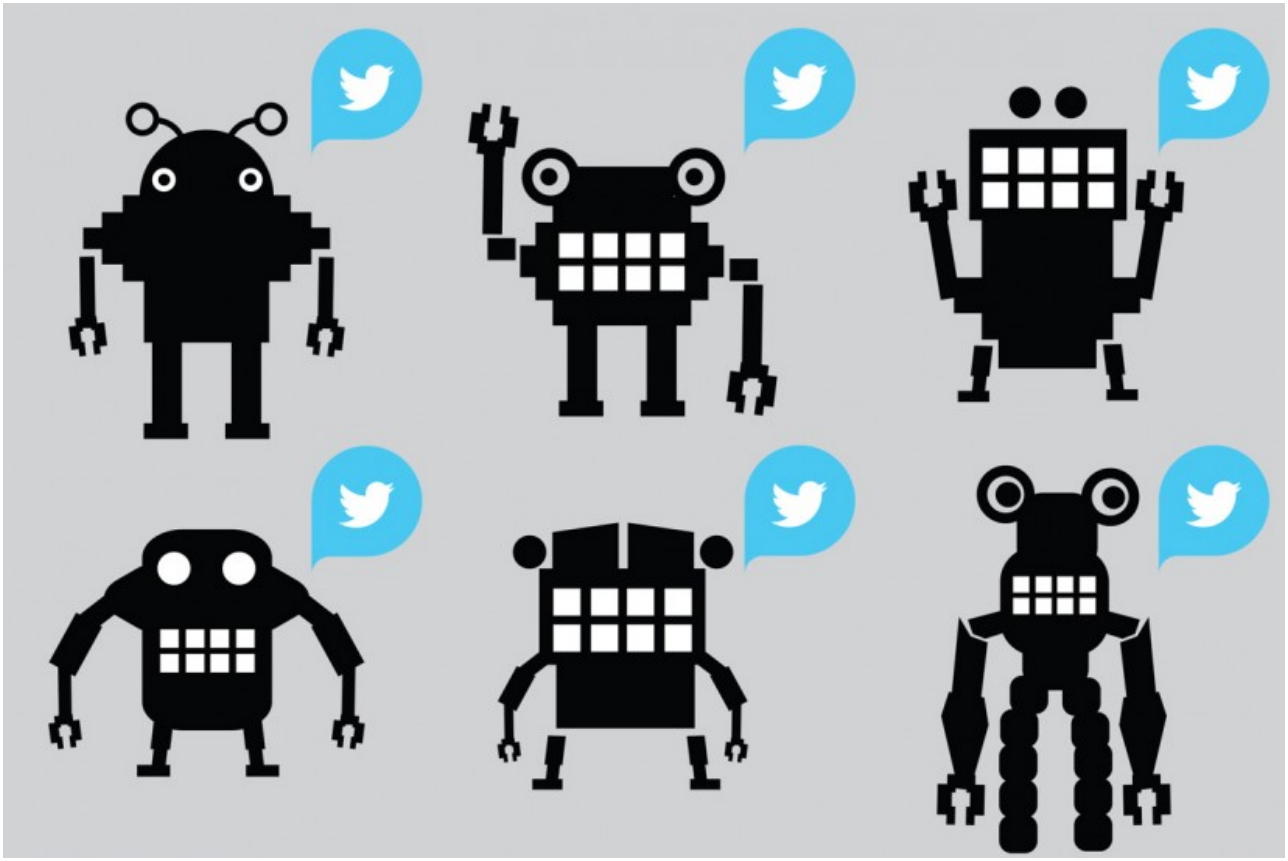
Accent Systems

April Brother

data analytics


7 TB SSD
8x Tesla P100 16GB
2x Xeon
NVIDIA DGX-1
WORLD'S FIRST DEEP LEARNING SUPERCOMPUTER
170 TFLOPS
3U - 3200W
NVLink Hybrid Cube Mesh
Quad IB 100Gbps, Dual 10GbE

bots



Millennials & Generation Z

Generations Defined

Generation Z
Born: after 1997
Age of Adults in 2015: 18to 19

Millenials
Born: 1981 to 1997
Age of Adults in 2015: 18 to 34

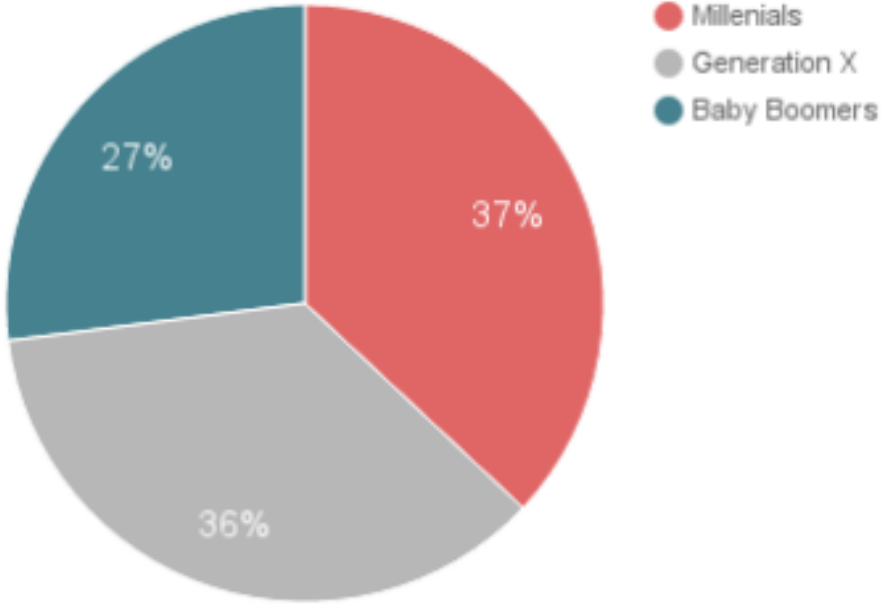
Generation X
Born: 1965 to 1980
Age of Adults in 2015: 35 to 50

Baby Boomers
Born: 1946 to 1964
Age of Adults in 2015: 51 to 69

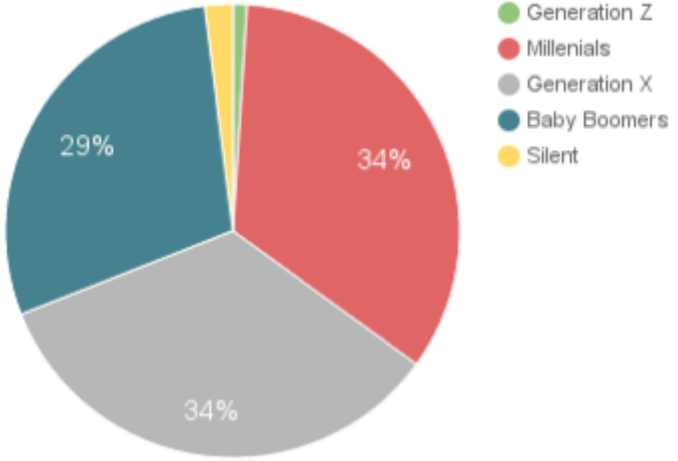
Silent Generation
Born: 1928 to 1945
Age of Adults in 2015: 70 to 87

Greatest Generation
Born: before 1928
Age of Adults in 2015: 88 to 100

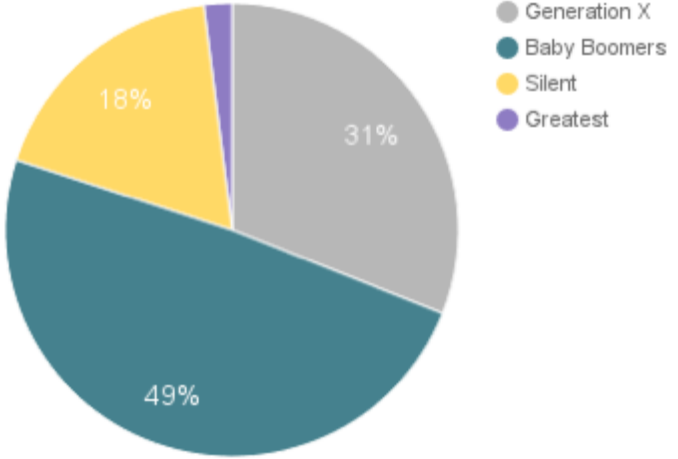
Labor Force Composition



CannonDesign 2015

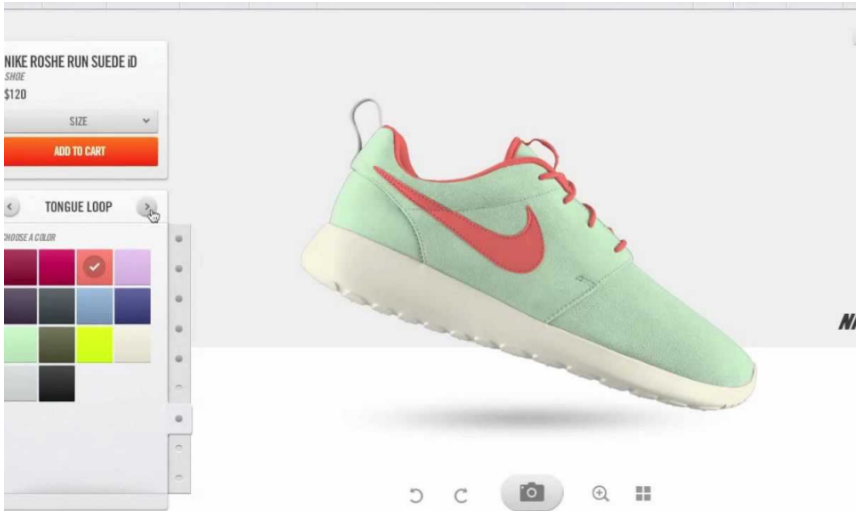


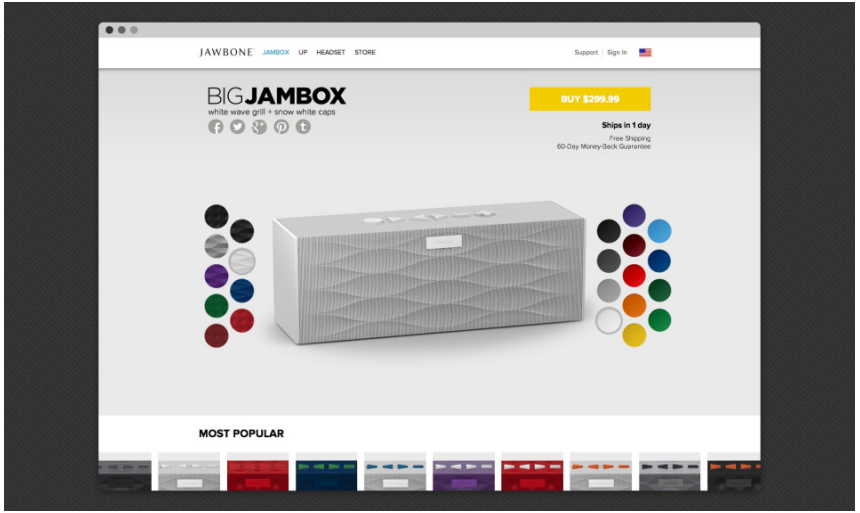
Average US 2015

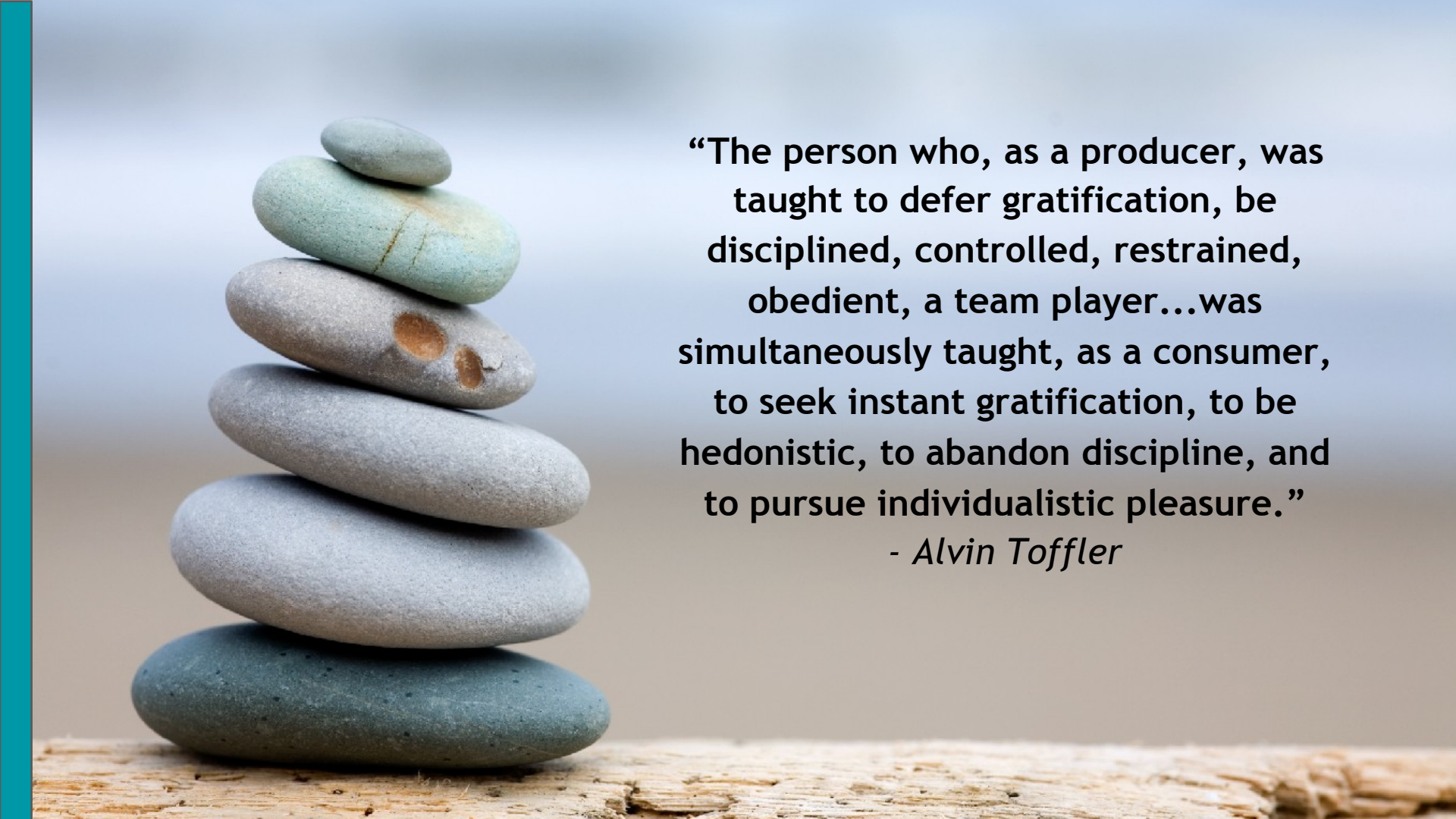


Average US 1995

Customization






“The person who, as a producer, was taught to defer gratification, be disciplined, controlled, restrained, obedient, a team player...was simultaneously taught, as a consumer, to seek instant gratification, to be hedonistic, to abandon discipline, and to pursue individualistic pleasure.”
- Alvin Toffler

co•op•e•ti•tion

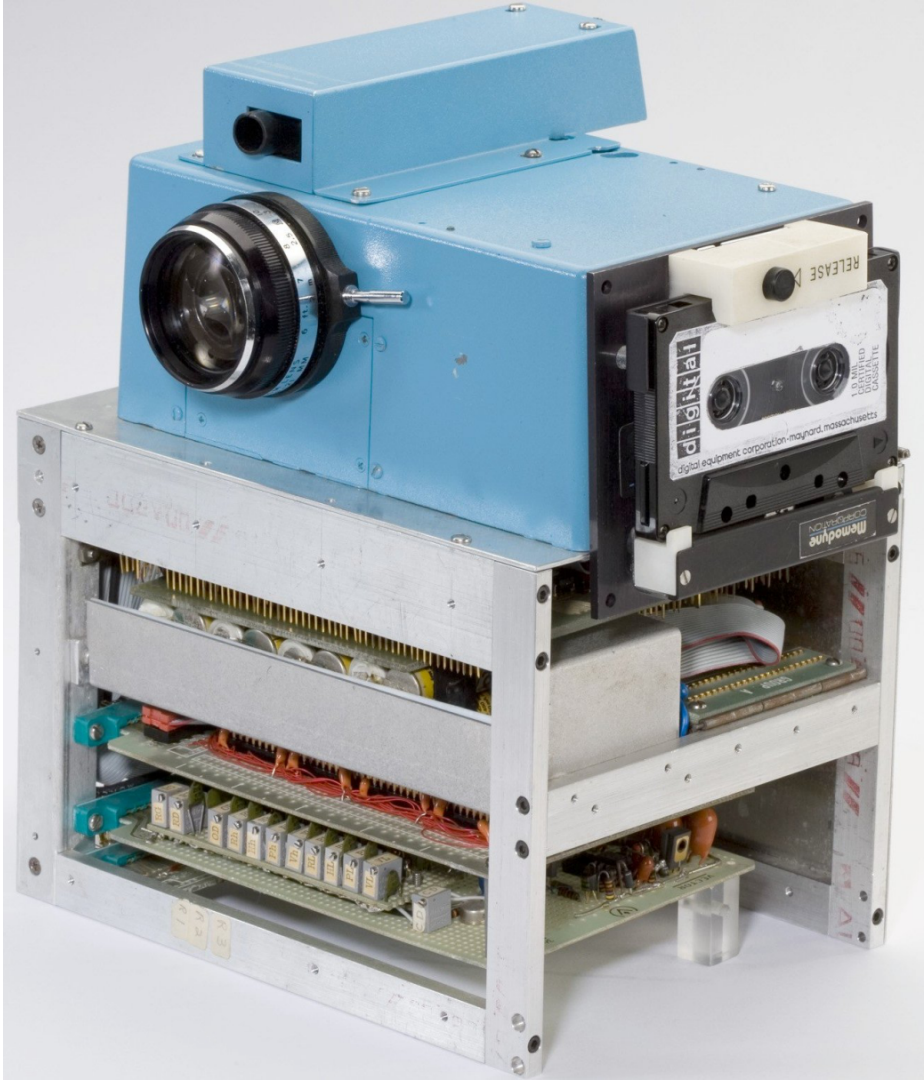
/kōˌäpəˈtiSH(ə)n/

collaboration between business competitors, in the hope of mutually beneficial results

“Our future is going to rise and fall with the dreamers and the doers, the builders of new technologies and the breakers of old orthodoxies.” - Steve Case

“Build something that makes you proud - but not satisfied enough to stop dreaming about what comes next. Enter the arena. Topple an empire and build your own from the ground up.” - Steve Case

“Amazon recognized the ebook industry would rule the future. So they built it themselves - the hardware and software - and now they own the past and future.” - Steve Case



partnership
policy
perseverance

“The third wave of the internet is coming, the moment where the internet transforms from something we interact with to something that interacts with everything around us.”
- Steve Case

“The third wave of ~~the internet~~ AEC is coming, the moment where the ~~internet~~ technology transforms from something we interact with to something that interacts with everything around us.”
- me

How did I do?

- Your class feedback is critical. Fill out a **class survey** now.
- Use the AU mobile app or fill out a class survey online.
- Give feedback after each session.
- AU speakers will get feedback in real-time.
- **Your feedback results in better classes and a better AU experience.**

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