



for the Built Environment

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ICAA 2019

The Future is Now:
Setting Yourself Up For Success

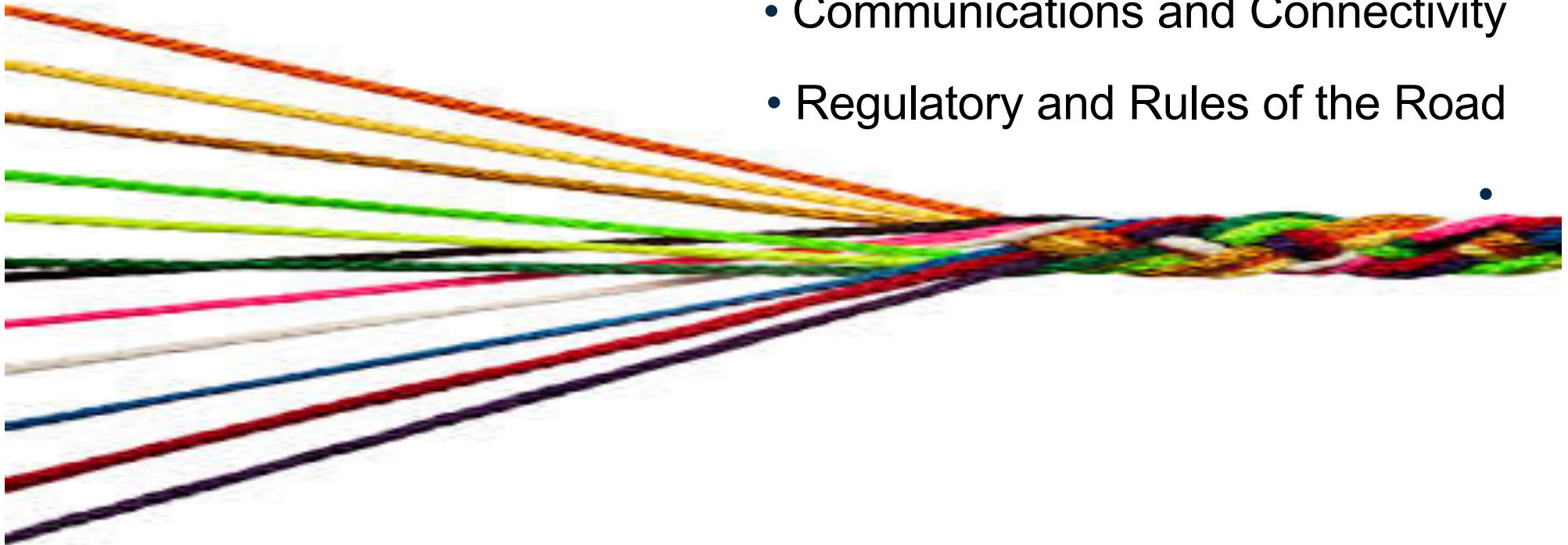
“

The industry will evolve more over
the next 5 years than it has over the
last 50 years”

Convergences

Existing Things Coming Together in New Ways

- Technological and Energy
- Economic and Value Creation
- Societal and Culture
- Communications and Connectivity
- Regulatory and Rules of the Road

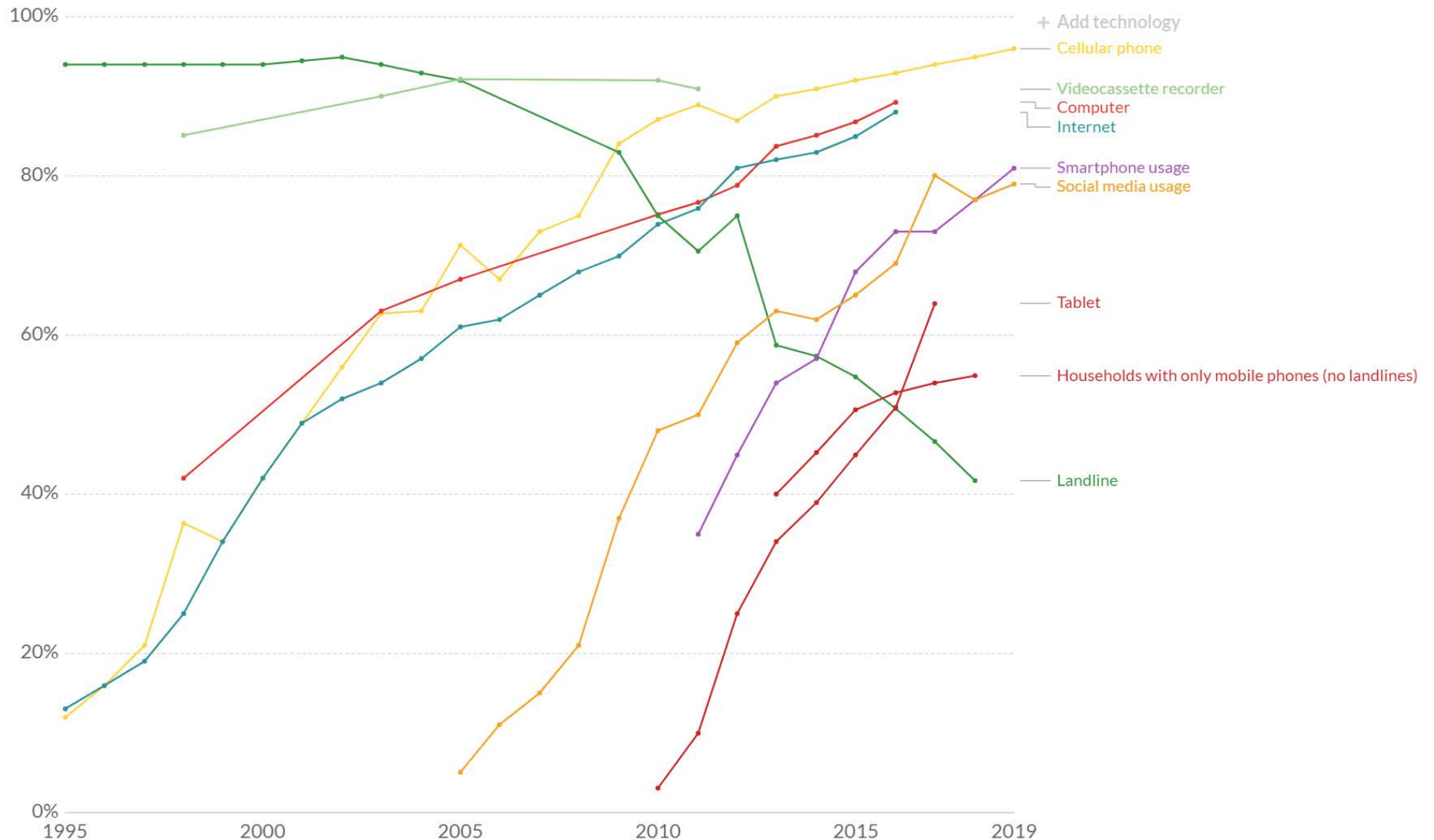


Speed of Change is Changing

Technology adoption in US households

Technology adoption rates, measured as the percentage of households in the United States using a particular technology.

Our World
in Data



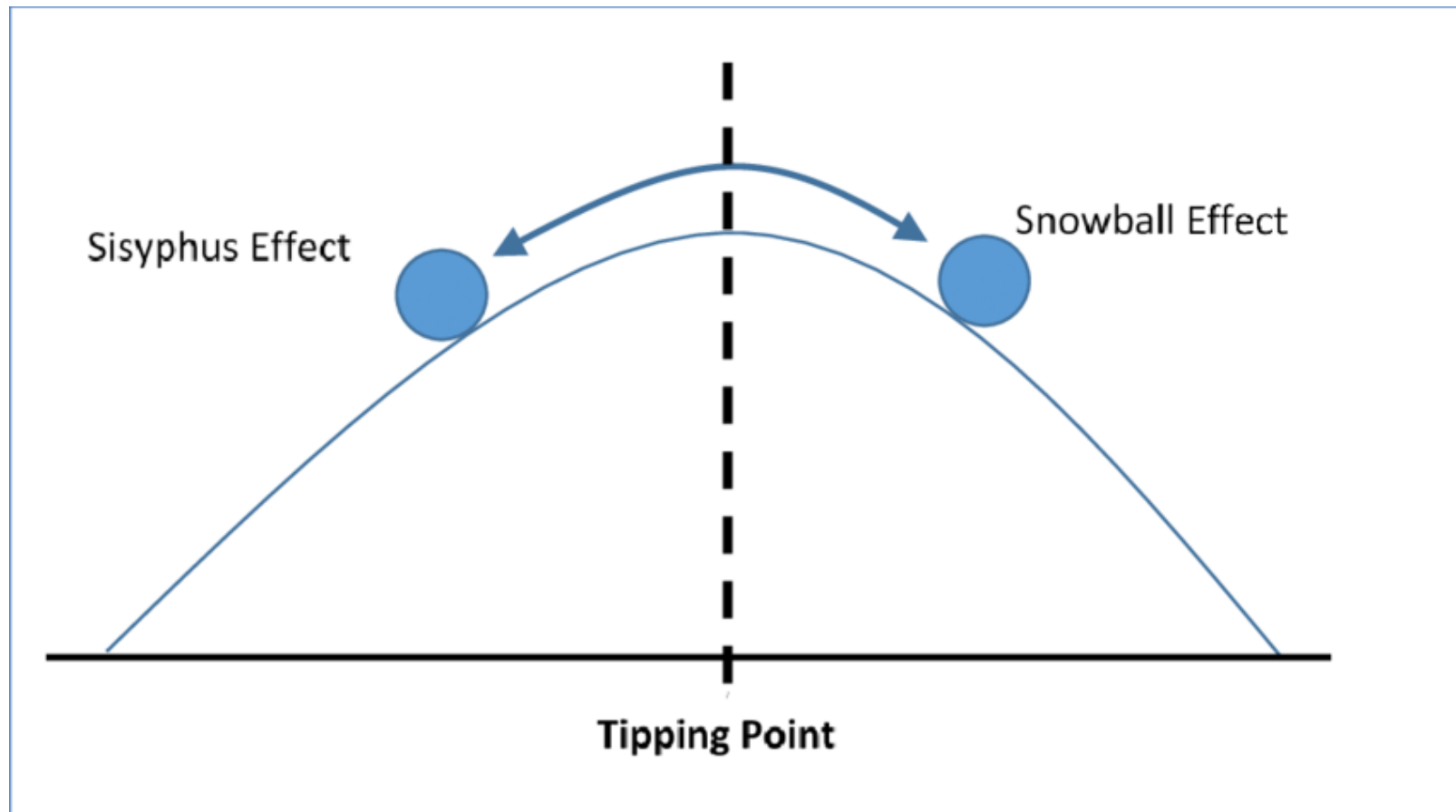
Source: Comin and Hobijn (2004) and others

Note: See the sources tab for definitions of household adoption, or adoption rates, by technology type.

OurWorldInData.org/technology-adoption/ • CC BY

Innovation & Adoption

Reaching a Tipping Point





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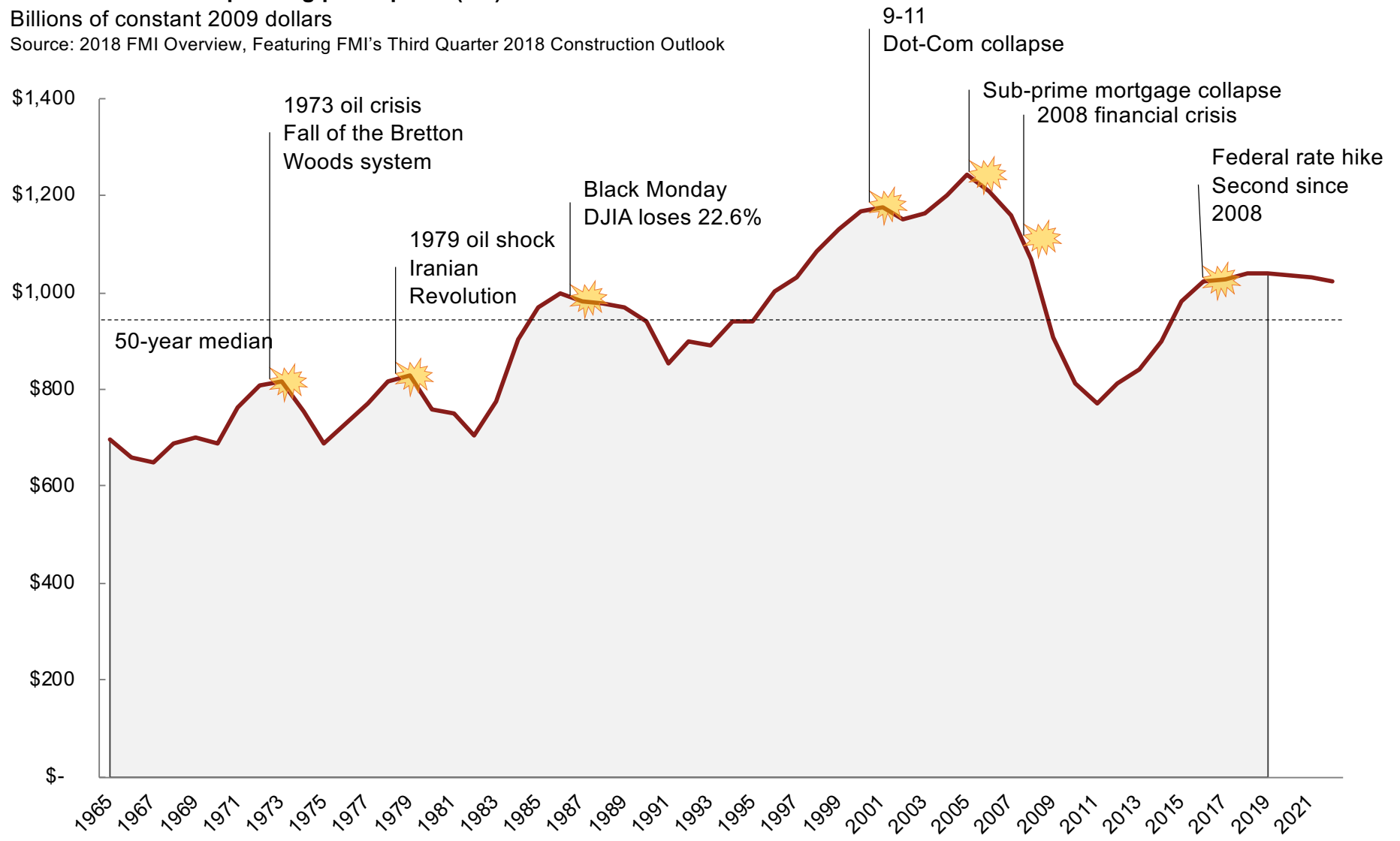
Current State of the Industry

Where are we in the current cycle?

Total construction spending put in place (US)

Billions of constant 2009 dollars

Source: 2018 FMI Overview, Featuring FMI's Third Quarter 2018 Construction Outlook

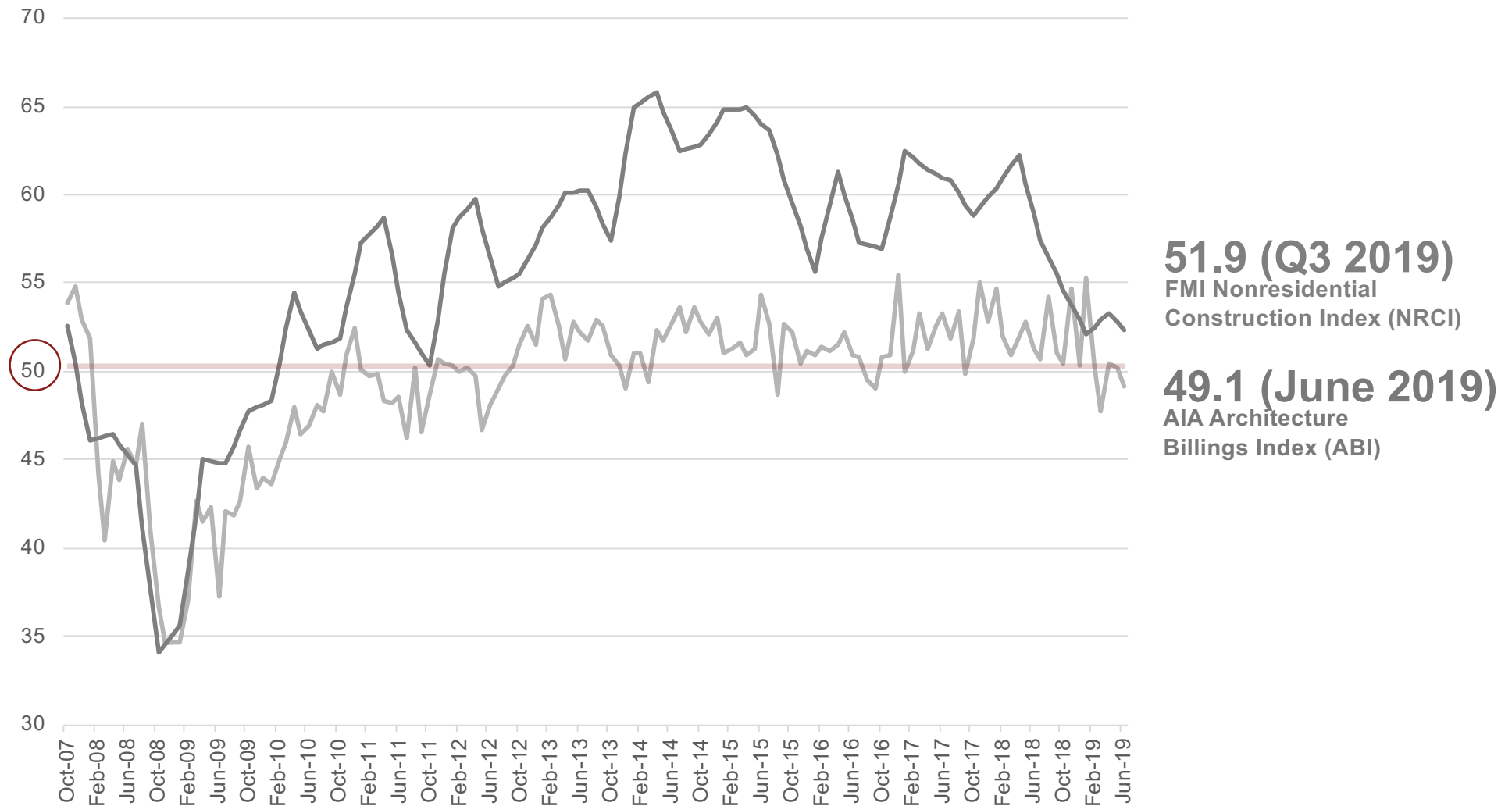


Modest industry optimism or cause for concern?

AEC-specific economic indicators

AIA Architecture Billings Index (AIA) and FMI Nonresidential Construction Index (NRCI); October 2007- July 2019

















Source: AIA, FMI



Predicting the next US recession

Predictive indicators

Source(s): FMI analysis of multiple sources

| Indicators / Metrics | Recessions Considered | Correct Predictions | False Positives | Prediction Strength* | Flag/ Warning Timing | Risk Assessment/ Trending |
|---------------------------------|-----------------------|---------------------|-----------------|----------------------|----------------------|------------------------------------------------------------------------------------------------|
| Yield Curve Inversion | 5 | 5 | - | High (100%) | ~2-3 year | HIGH  |
| New Home Sales | 6 | 5 | 1 | High (67%) | ~1-4 year | MODERATE  |
| Unemployment Rate | 6 | 4 | - | High (67%) | ~1 year | LOW  |
| US Trade Balance (BOP % change) | 6 | 6 | 2 | High (67%) | ~1 year | LOW  |
| Money Supply | 7 | 5 | 1 | High (57%) | ~1-3 year | MODERATE  |
| Lumber Sales | 2 | 2 | 1 | High (50%) | ~1-2 year | HIGH  |
| MBS Held by Banks | 2 | 2 | 1 | High (50%) | ~1-2 year | LOW  |
| Rental Vacancy Rates | 9 | 4 | - | (44%) | ~1-4 year | MODERATE  |
| Residential CPIP | 6 | 3 | 1 | (33%) | ~1-3 year | MODERATE  |
| Stock Market Performance | 3 | 2 | 1 | (33%) | <1 year | MODERATE  |
| Copper Price (Doctor Copper) | 7 | 4 | 2 | (29%) | ~2-5 year | HIGH  |
| Consumer Confidence (OECD) | 8 | 5 | 4 | Low (13%) | ~1 year | MODERATE  |
| Heavy Duty Truck Sales | 7 | 4 | 4 | Low (0%) | ~1-2 year | MODERATE  |
| Manufactured Goods, New orders | 2 | 1 | 1 | Low (0%) | ~1 year | MODERATE  |
| US Trade Balance (values) | 6 | 1 | 1 | Low (0%) | ~1 year | LOW  |
| Unemployment Claims | 7 | 4 | 5 | Low (-14%) | ~1 year | MODERATE  |

Mixed Signals

Is it too soon to begin using the R-word?



Consumer confidence remains high



Unemployment remains below the Federal Reserve's target



Corporate earnings surpassed expectations



Increased capital growth and higher exports boost manufacturing



No expected increase in the fed funds rate



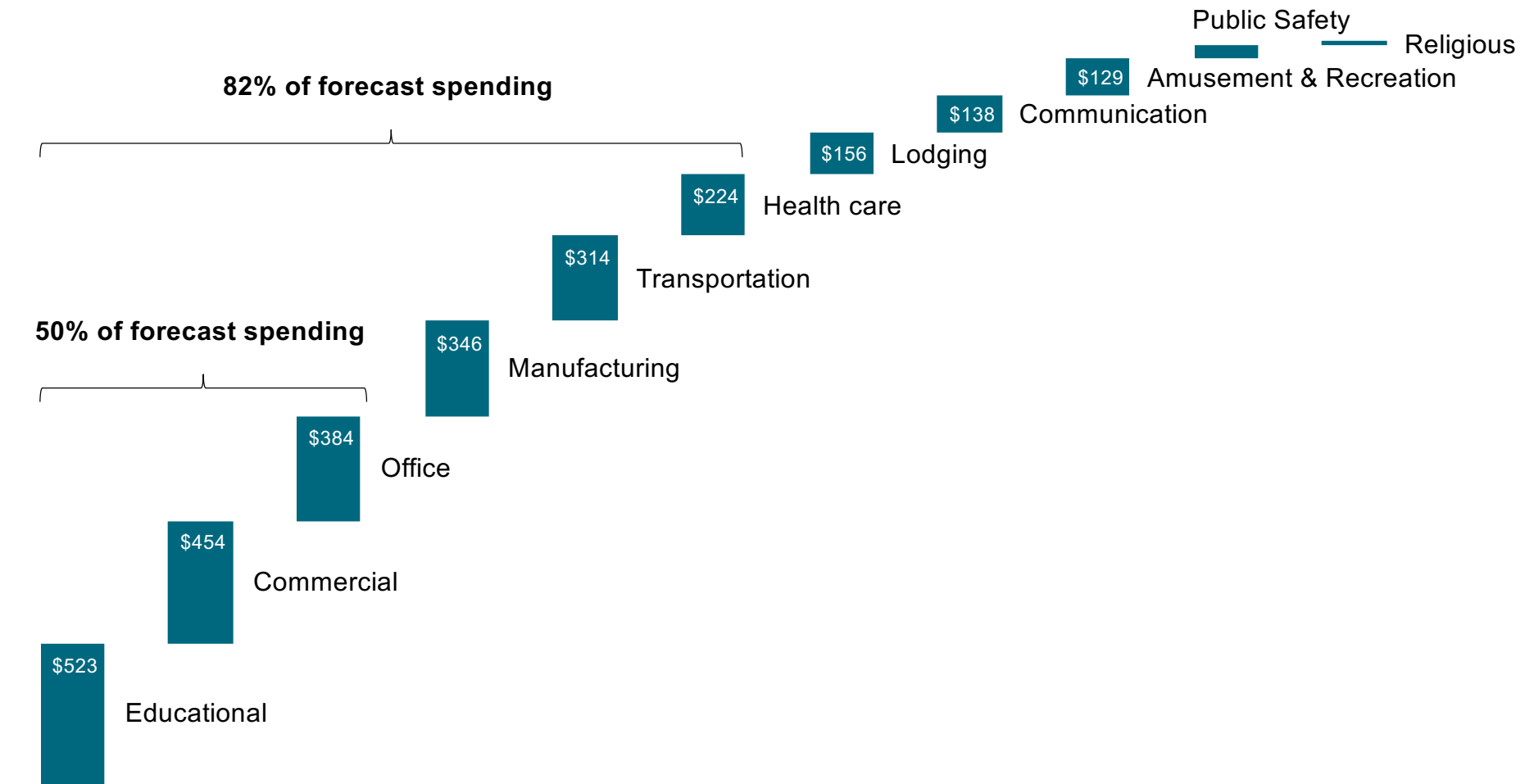
GDP continues to be positive

Three segments make up half of forecast spending

Forecast spending by nonresidential building segment (five-year total; 2019- 2023)

US; Billions of current dollars

Source: FMI Q2 2019 forecast

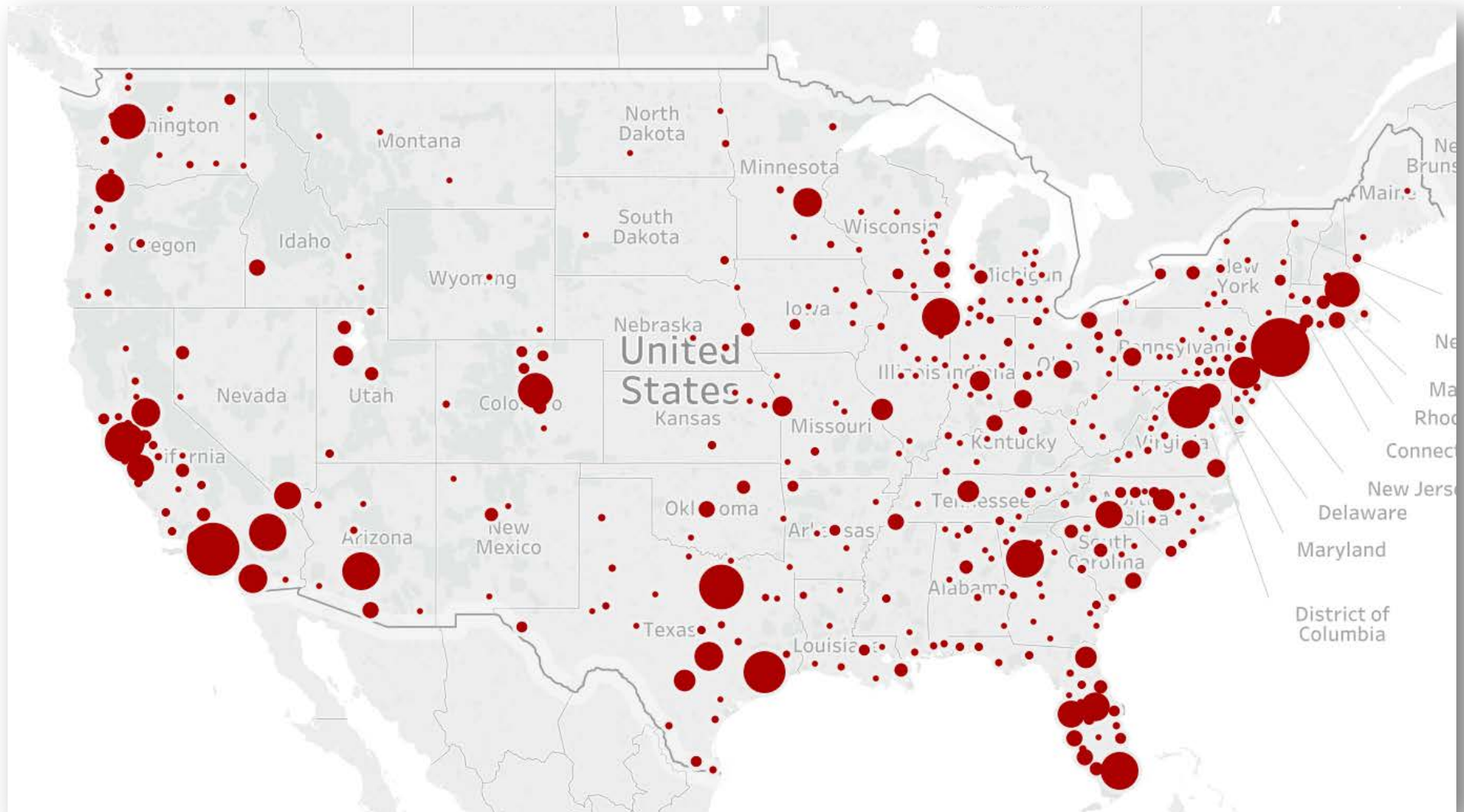


Activity concentrates in fewer markets

Nonresidential building construction spending put in place by metro market (2018)

Forecast by Metropolitan Statistical Area (MSA)

Source: FMI



Finding more people is not the only answer

The collage features several articles illustrating the evolution of the construction labor shortage problem over time:

- 1980s:** "Wage Pressures and Labor Shortages: The 1960s and 1980s" by Daniel J. B. Mitchell, University of California, Los Angeles. The article discusses the unemployment rate falling during 1988 and early 1989 into the 5-5.5 percent range, with observers worried about upward pressure on wages when wage inflation returns.
- 1990s:** "Latest Construction Bottleneck: Shortage of Skilled Workers" by Charles V. Bagli, August 15, 1999. It mentions John Carroll, a red-haired electrician at a building project on 42nd Street, who is a short supply as the real estate boom finally ends.
- 2000s:** "Labor Shortages – What do You do When You’ve Got the Work, but Nobody to do it?" (April 1, 2000). "Heavy Equipment Operator Jobs Faces Shortage Labor for Construction Equipment Industry" (ORANGE PARK, FL (PRWEB) JUNE 2). "Construction Equipment Industry shortage of skilled labor work" (CONTENT). "Wanted: Skilled Labor" (According to the latest numbers from the U.S. Bureau of Labor Statistics, Americans are hard at work. At last count, the total U.S. unemployment rate stood at the low).
- 2010s:** "Retiring Baby-Boomers = A Labor Shortage?" (April 24, 2007 – January 30, 2008). "Solving manpower shortage requires fresh approaches" (Talk to almost any contractor in virtually any part of the country these days, and chances are the problem he is facing is a lack of labor. Projects are there; the people to do the work are not. The labor crunch has reached such a point now that the time for fresh approaches to manpower shortage is going to require efforts by individual contractors, unions, and the government). "Causes of the Construction Skilled Labor Shortage and Proposed Solutions" (Author: R. Chris Brinson, H. Brown, and Eric G. Segerson). "The Skilled Workforce Shortage" (Strong partnerships and alliances are required to develop our current and future workforce). "Skilled Trades Seek Workers" (Contractors, Unions Try Web, Schools, A 'Dirty Jobs' Role).

A large blue arrow points from the 1980s to the 2010s, indicating the progression of time and the persistence of the labor shortage issue.





Tech Investment is Accelerating

*Quoting from a recent report from research company CREtech, The Journal reported that **venture capital investment in private contech firms increased from \$352 million in 2016 to more than \$6 billion in 2018. As of the end of June, investments totaled more than \$4 billion, indicating that capital injections into contech in 2019 could surpass those made in 2018***







– Construction Dive, July 3, 2019

Past Tech investment activity over the last 24 months

Scheduled acquisitions that occurred over the last two years:

-  KATERRA buys many A/E/C firms
-  Trimble buys  e-Builder
-  AUTODESK. buys  assemble
-  ORACLE® buys  aconex
-  Trimble buys  VIEWPOINT
A TRIMBLE COMPANY
-  BUILDINGCONNECTED buys  TRADETAPP
by BUILDINGCONNECTED
-  AUTODESK. buys  PlanGrid
-  BOREALIS VENTURES raises \$58M in builttech fund
-  PROCORE® closes \$75M fund with a \$1B valuation
-  AUTODESK. buys  BUILDINGCONNECTED

An example of platforms ripe for M&A or investment:

-  B2W SOFTWARE *
-  busybusy
-  HOLO BUILDER
-  SMARTVID.IO
-  tf testfit.io
-  DroneDeploy
-  BUILT ROBOTICS
-  Construction Robotics



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Future of The Industry

Smart Cities

- 5G and wireless electricity enable sensor technology nearly everywhere
- Autonomous vehicles change the way we build cities and roads
- Public and private collaboration increases to retrofit or replace infrastructure
- Cybersecurity becomes even more critical



SMART CITY USE CASES



SMART
PARKING



WEATHER
SENSORS



DIGITAL
SIGNAGE



ACOUSTIC
SENSORS



WATER & GAS
METERING



TRAFFIC
LIGHTS &
CONTROLS



ELECTRIC
VEHICLE
CHARGING



SOLAR
INVERTERS



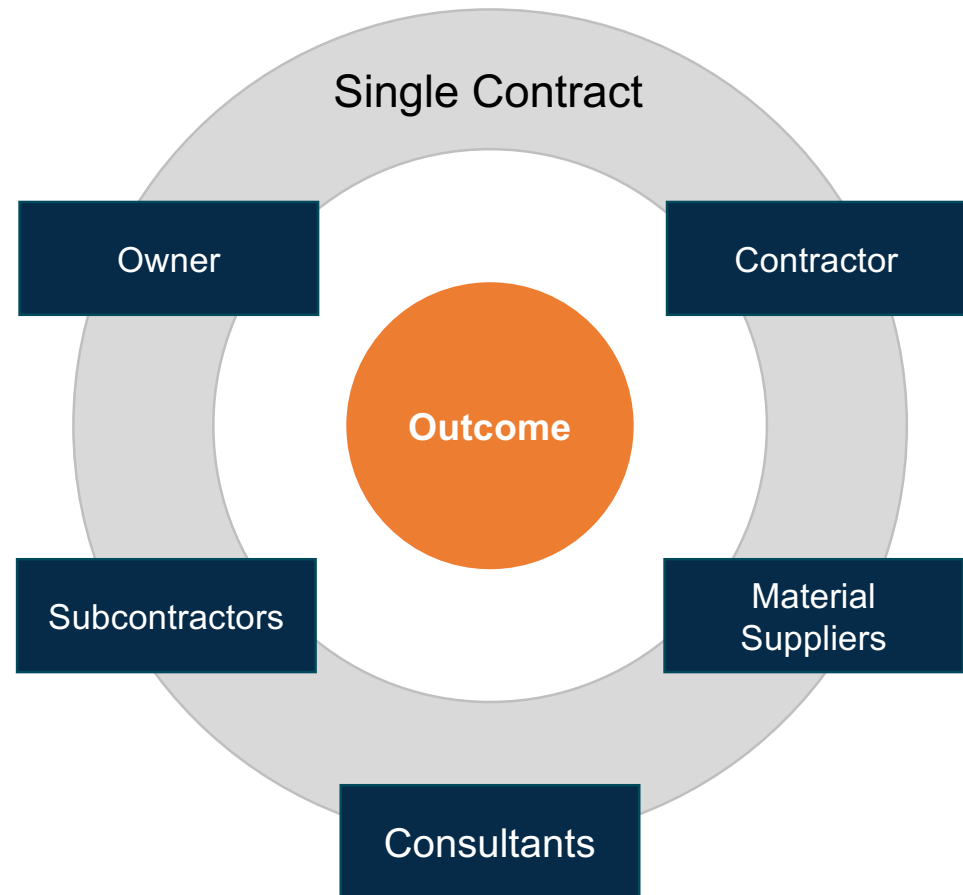
SECURITY AND
SURVEILLANCE



WASTE
MANAGEMENT

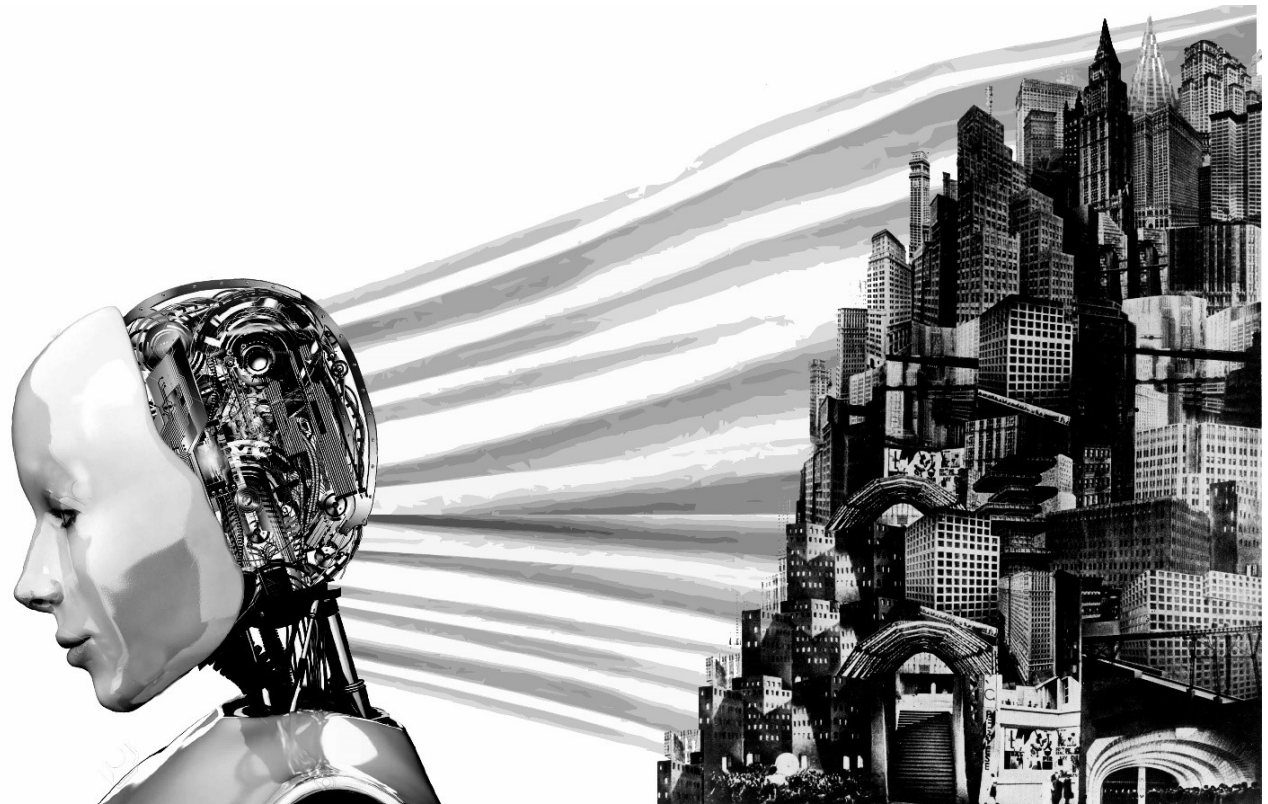
Changing Industry Dynamics

- Project delivery will become more expedited than it already has
- Megaprojects (>\$1 billion) will become the norm requiring greater levels of coordination and sophistication
- Stakeholder influence is shifting away from the traditional roles



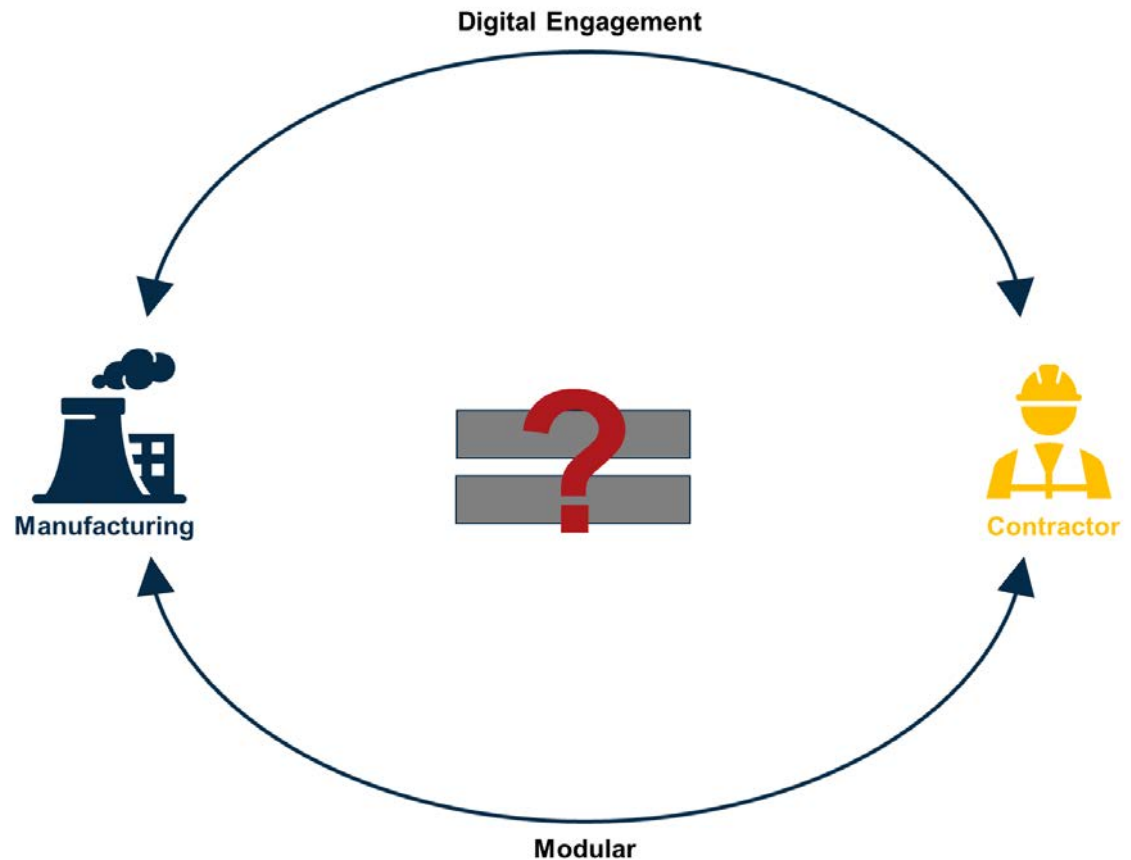
Construction Tech

- Advanced materials will become integrated into the built environment
- Remote control and automation will reduce labor on the job site
- Big data and artificial intelligence will transform engineering and architecture



Disruption of the Supply Chain

- The current model is prime for disruption
- Increased connectivity between contractor and manufacturer
- Modularization and mass customization will become the norm
- The lines begin to blur between contractor and manufacturer





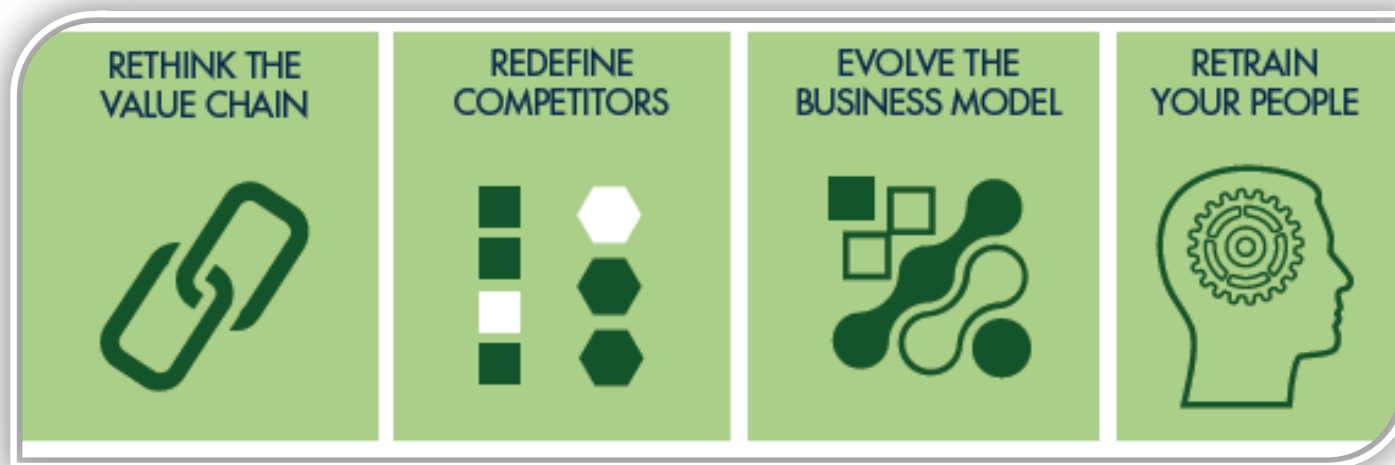
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How to Prepare?

Mapping Your Next Moves

- ✓ Establish a Vision
- ✓ Foster a Culture of Innovation
- ✓ Build a Talent Strategy and Change Mindset
- ✓ Know Your Core
- ✓ Develop a Technology Strategy
- ✓ Own the Customer
- ✓ Rethink Your Role in The Value Chain



Thank You!



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Paul is a principal within FMI's Strategy practice and his primary focus is partnering with members of the building products industry by assisting them in developing their strategies relating to growth, value creation and new product launches. Paul's extensive experience working with many of the most well-respected manufacturers and distributors in the industry, combined with his deep relationships in the contractor community, enables him to bring a comprehensive perspective of the market to his clients.

Before focusing his efforts on building product manufacturers, Paul worked closely with some of the nation's largest and most notable contractors to assist them in developing their organizational strategies and go-to-market plans. Paul also has extensive experience advising private equity clients on market dynamics relating to potential investments.

Paul earned his Master of Business Administration with a concentration in information systems management from the University of Tampa. While at the University of Tampa, Paul was honored as a Beta Gamma Sigma honor graduate. Prior to his MBA, Paul received an undergraduate degree from Florida State University in political science with a minor in psychology.

Who We Are

FMI is the leading consulting and investment banking firm dedicated exclusively to the built environment. We serve the industry as a trusted advisor. More than six decades of context, connections and insights lead to transformational outcomes for our clients and the industry.

FMI CONSULTING

FMI has more relationships in the industry than any other consulting firm. We leverage decades of focused experience and expertise to advise on strategy, leadership and organizational development, performance, technology and innovation.

PRACTICE AREAS

Strategy

- Market Research
- Market Strategy
- Business Development
- Strategic Planning

Leadership and Organizational Development

- Leadership & Talent Development
- Succession Management
- High Performing Teams
- Corporate Governance
- Executive Coaching

Performance

- Operations
- Risk Management
- Compensation
- Peer Groups

Technology and Innovation

- Tech Market Accelerator
- Tech Partner Program
- Tech Readiness Assessment
- Tech Sourcing & Adoption
- Integrated Business Intelligence

FMI CAPITAL ADVISORS

We are the leading investment banking firm exclusive to the built environment. Our dedicated team of more than 35 experienced M&A finance professionals has completed hundreds of transactions in the industry. FMI offers the broadest and deepest M&A coverage of the Built Environment.

Sector Expertise

- Architecture, Engineering & Environmental
- Building Products
- Construction Materials
- Contractors
- Energy Service & Equipment
- Energy Solutions & Cleantech
- Utility Transmission & Distribution

Services

- M&A Advisory
- ESOP
- Valuations
- Ownership Transfer

Executive Education

- Acquisitions in the Construction Industry
- Ownership Transfer & Management Succession



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