

Delivering the Future

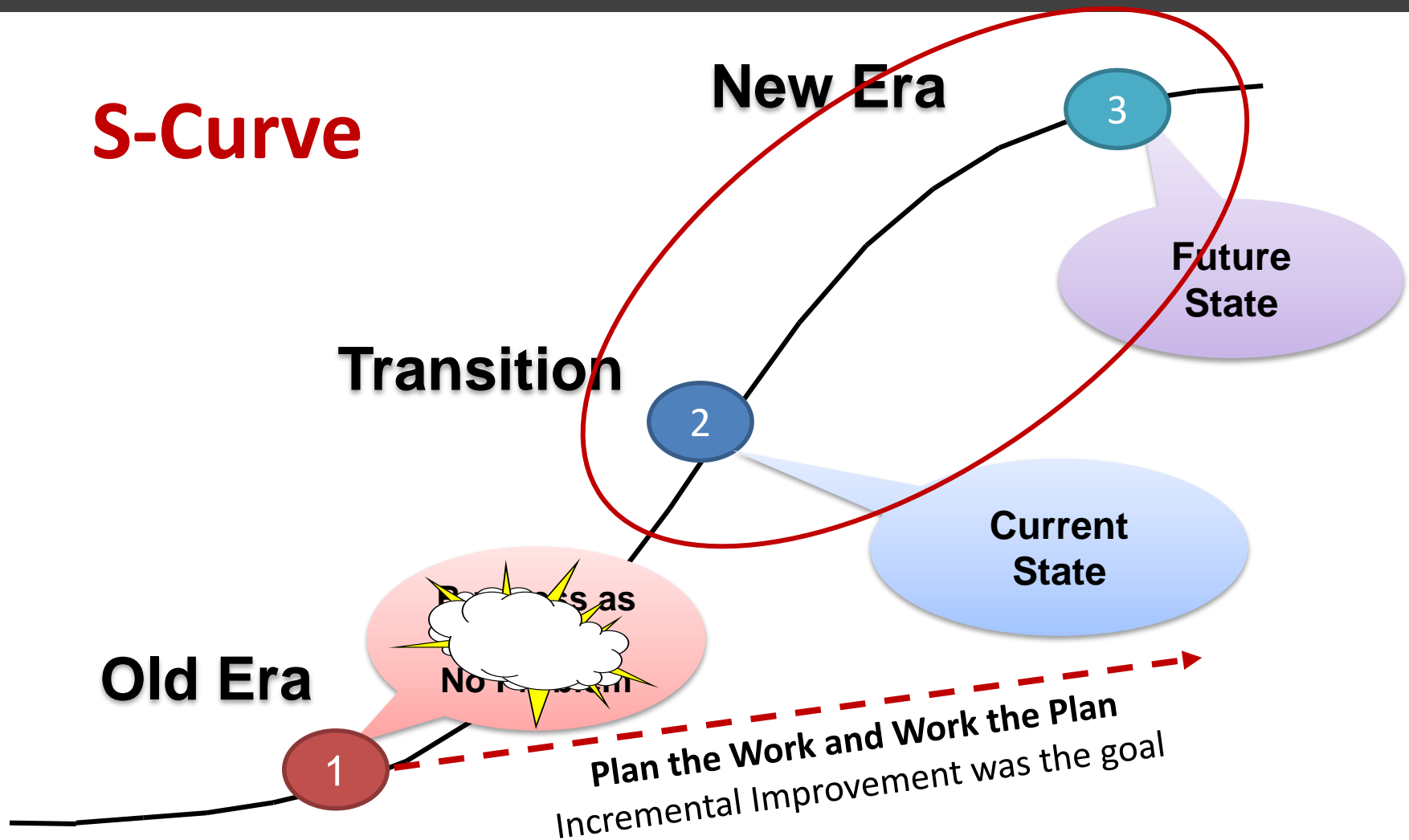
Barbara J. Jackson, PhD, DBIA
University of Denver
Denver CO
February 2018

What Future are we Delivering?



CHANGE IS COMING AT US LIKE A SPEEDING TRAIN

Shape of Disruptive Change



**The opportunities to create the
most value are found at
the edge of**

disrupt

Where is the Edge of Disruption?

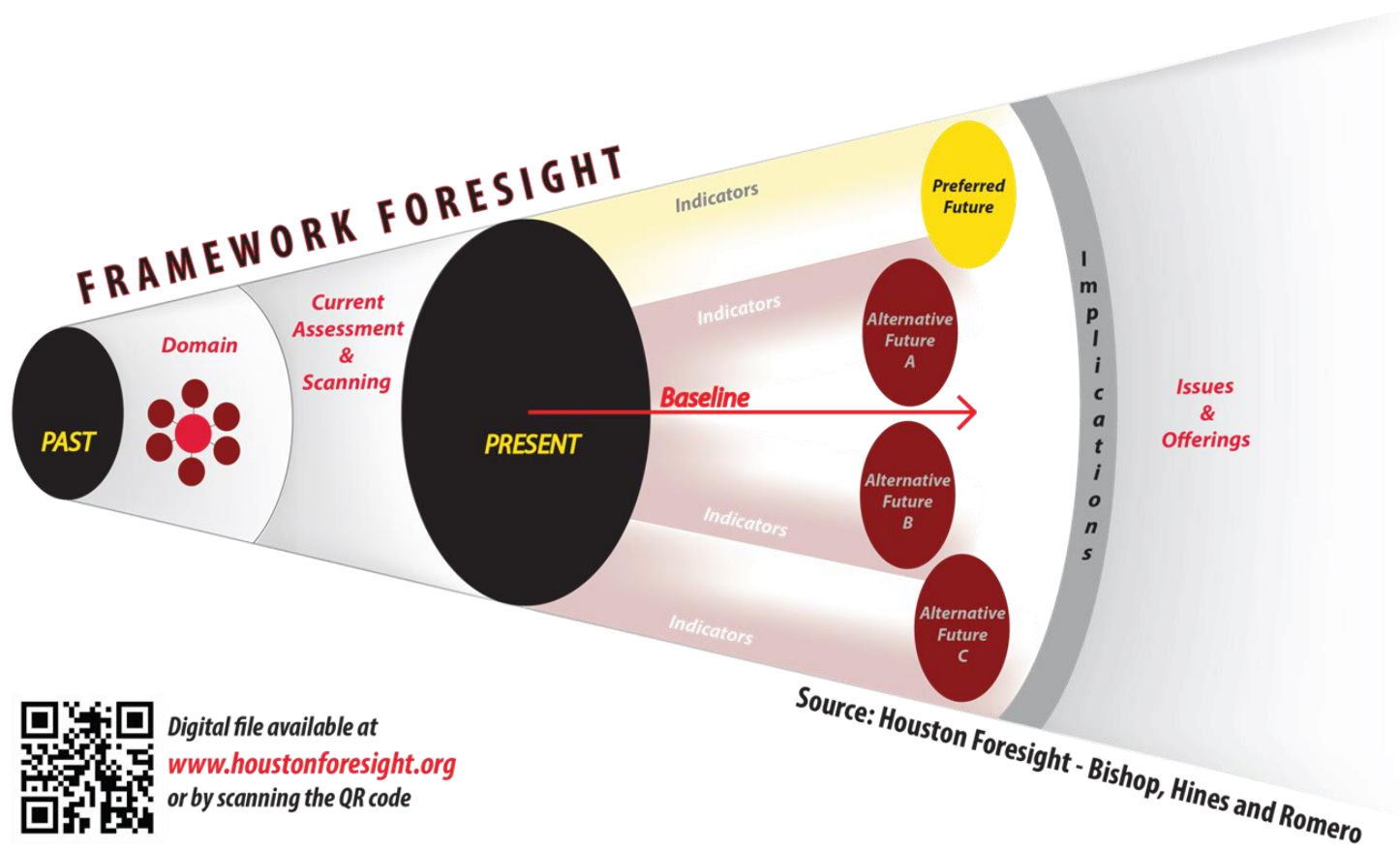
- At the intersection of the old and the new
- Where the most complex problems, with the fewest solutions are found
- That point at which you can see the past, the present, AND the future!
 - in technology, regulation, customer demand,
 - cost structures, employees, investors,
 - and other variables
- Where you provide the greatest value to your clients to their most complex challenges

disrupt

The key disruptive factors for our industry are:

- High segmentation, fragmentation (siloed)
- Low productivity gains (1% during last 20 years)
- Low adoption of digital technologies
- High level of waste
- Leadership
- Culture

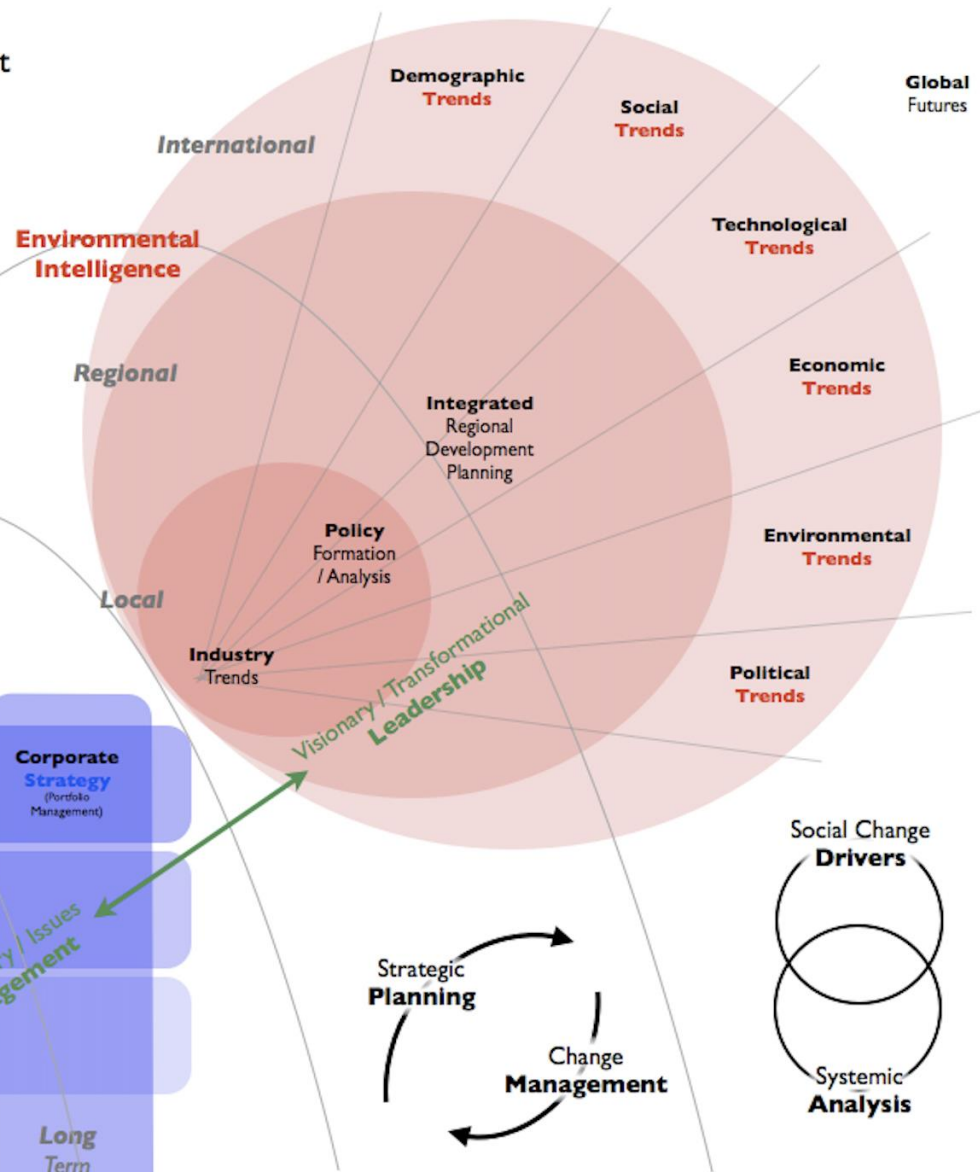
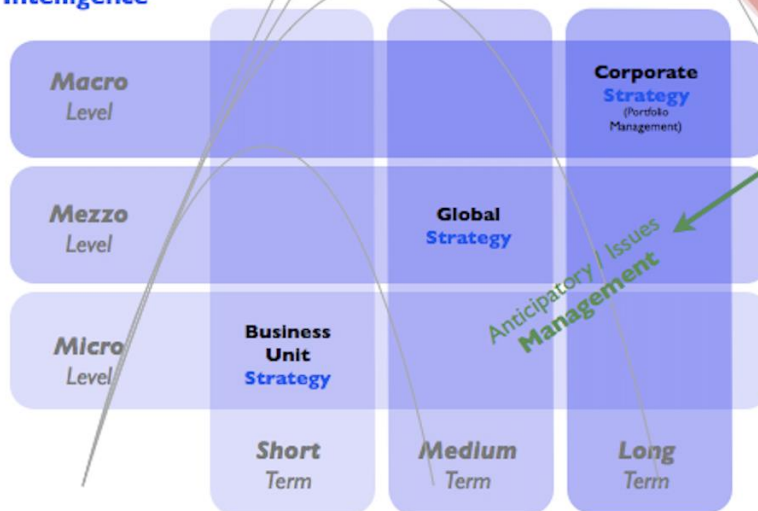
What Future are we Delivering?



STRATEGIC FORESIGHT

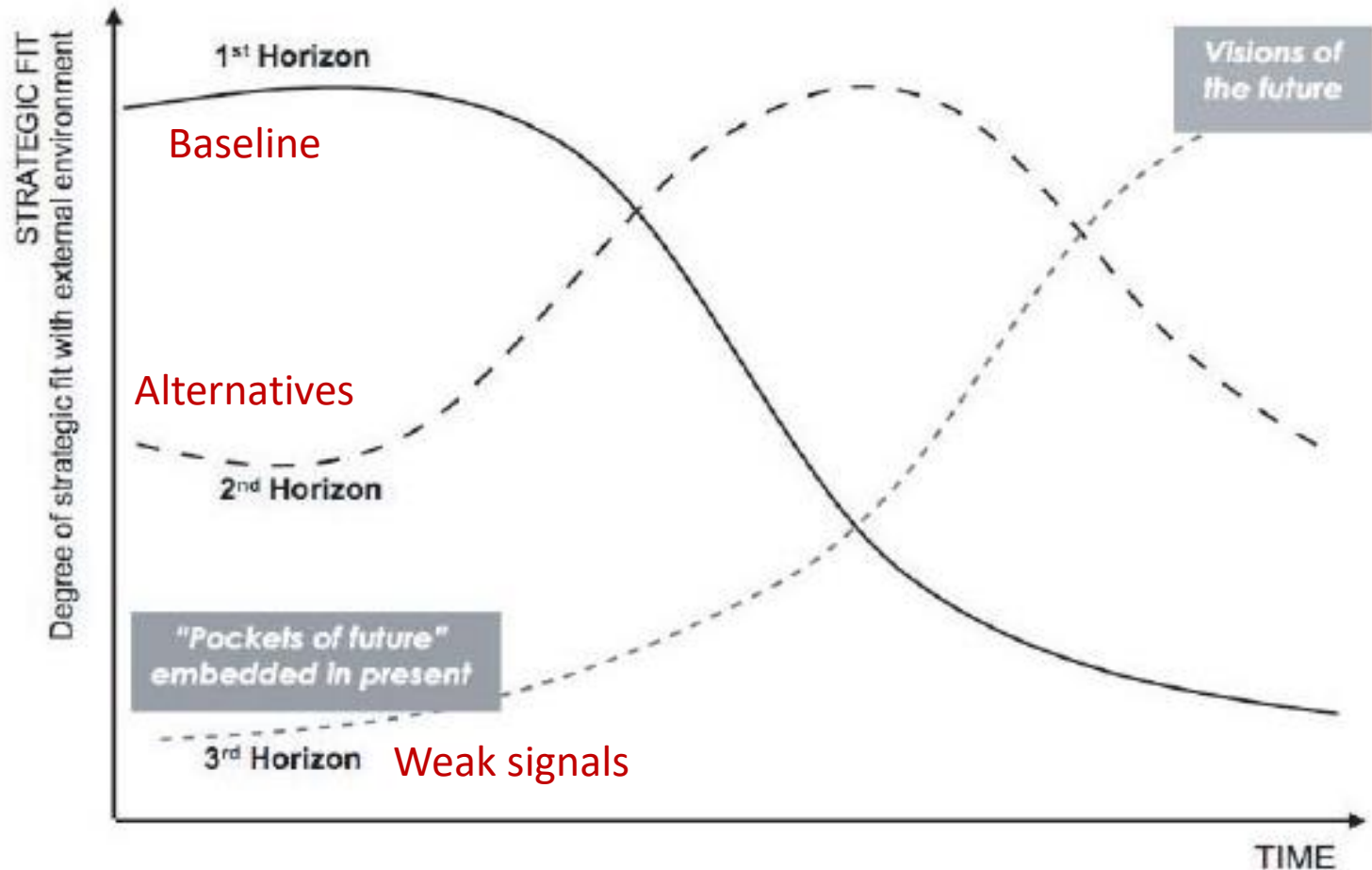
- Relate insights from environmental intelligence to business strategy
- Strategic planning and change management become dynamic interrelated processes.
- Assessment of the drivers and the systemic connections among factors of change, and the impact and uncertainty of issues.
- Helps navigate between anticipatory management and visionary leadership and innovation.

Business Intelligence

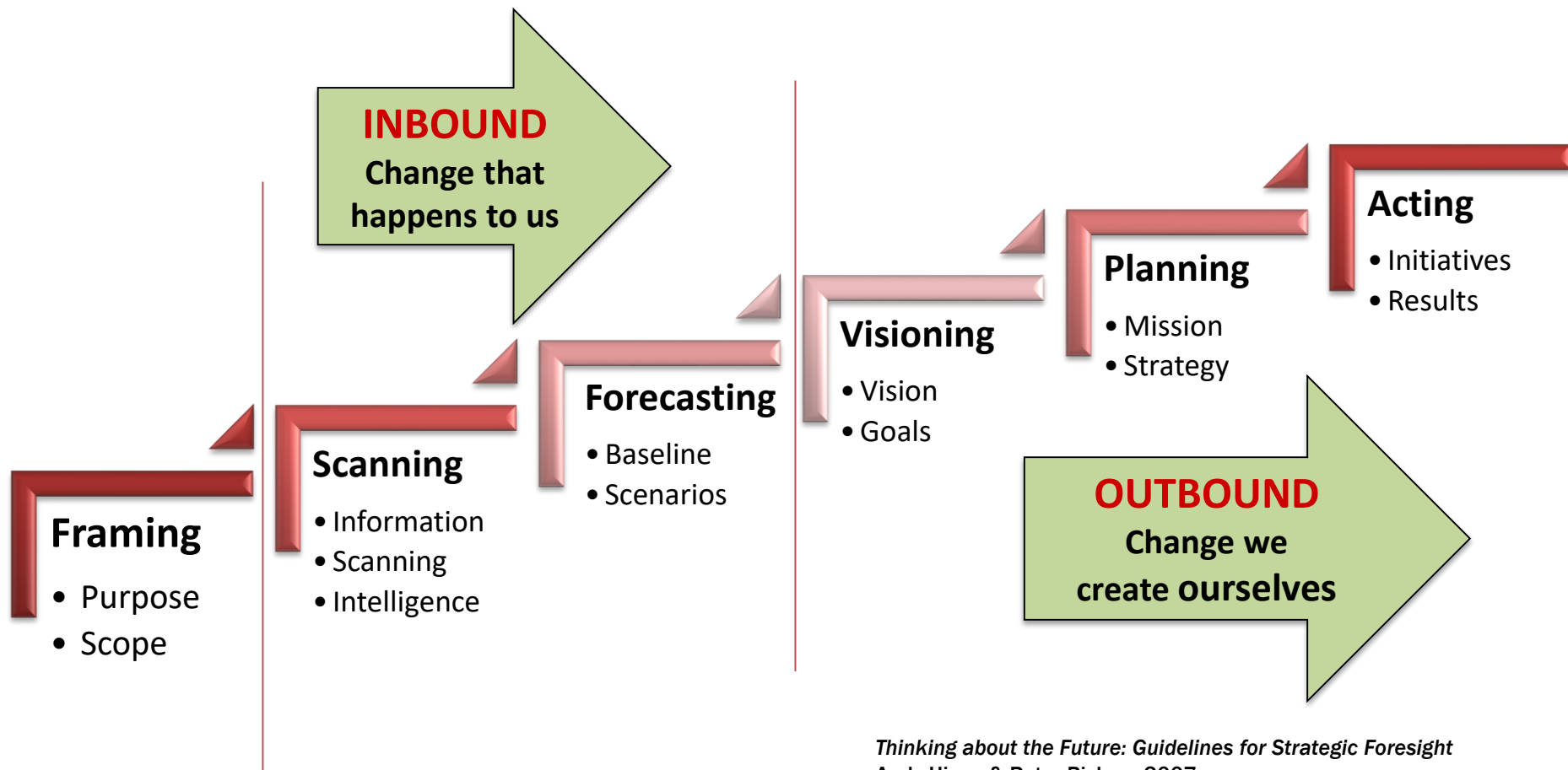


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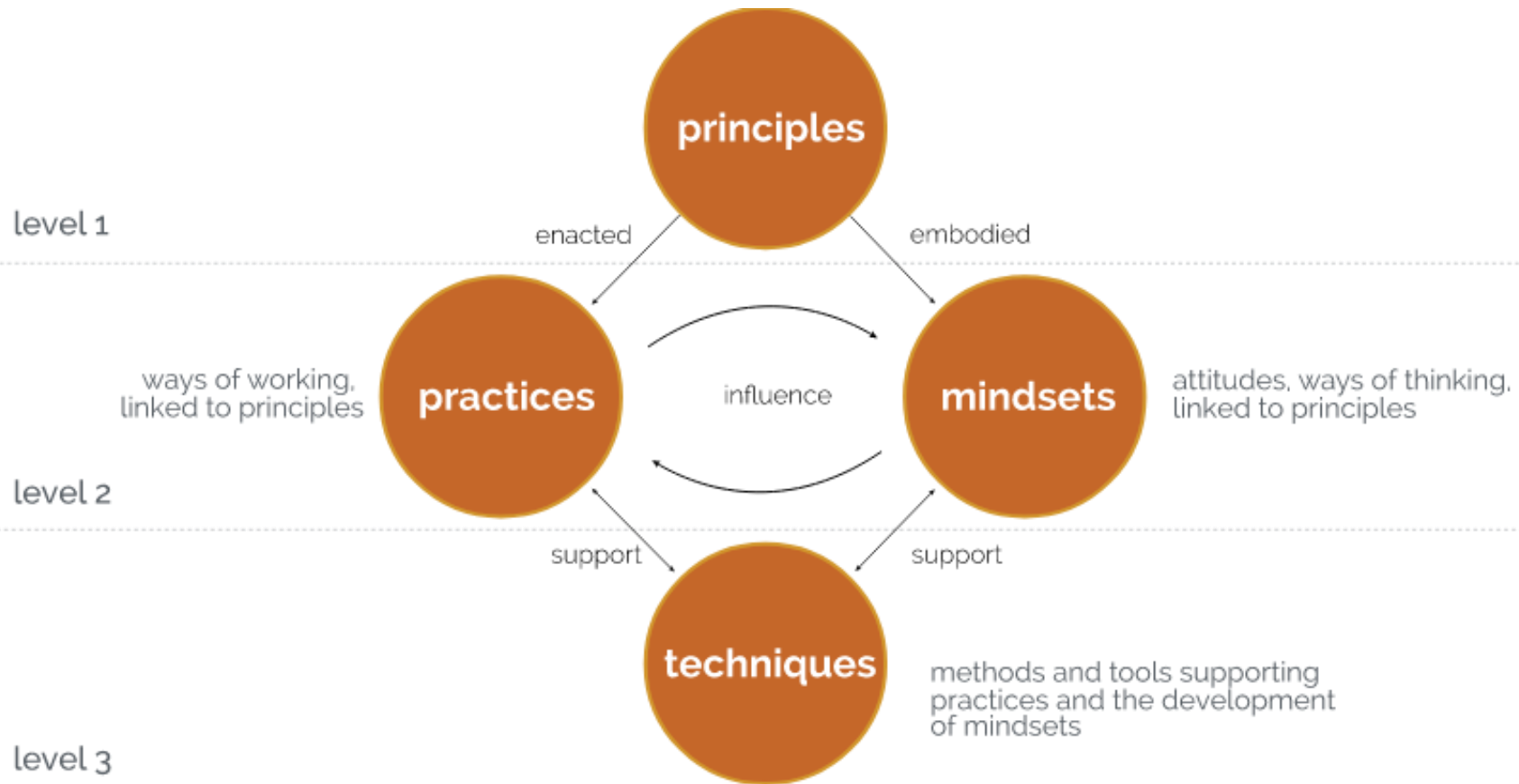


What Future are we Delivering?



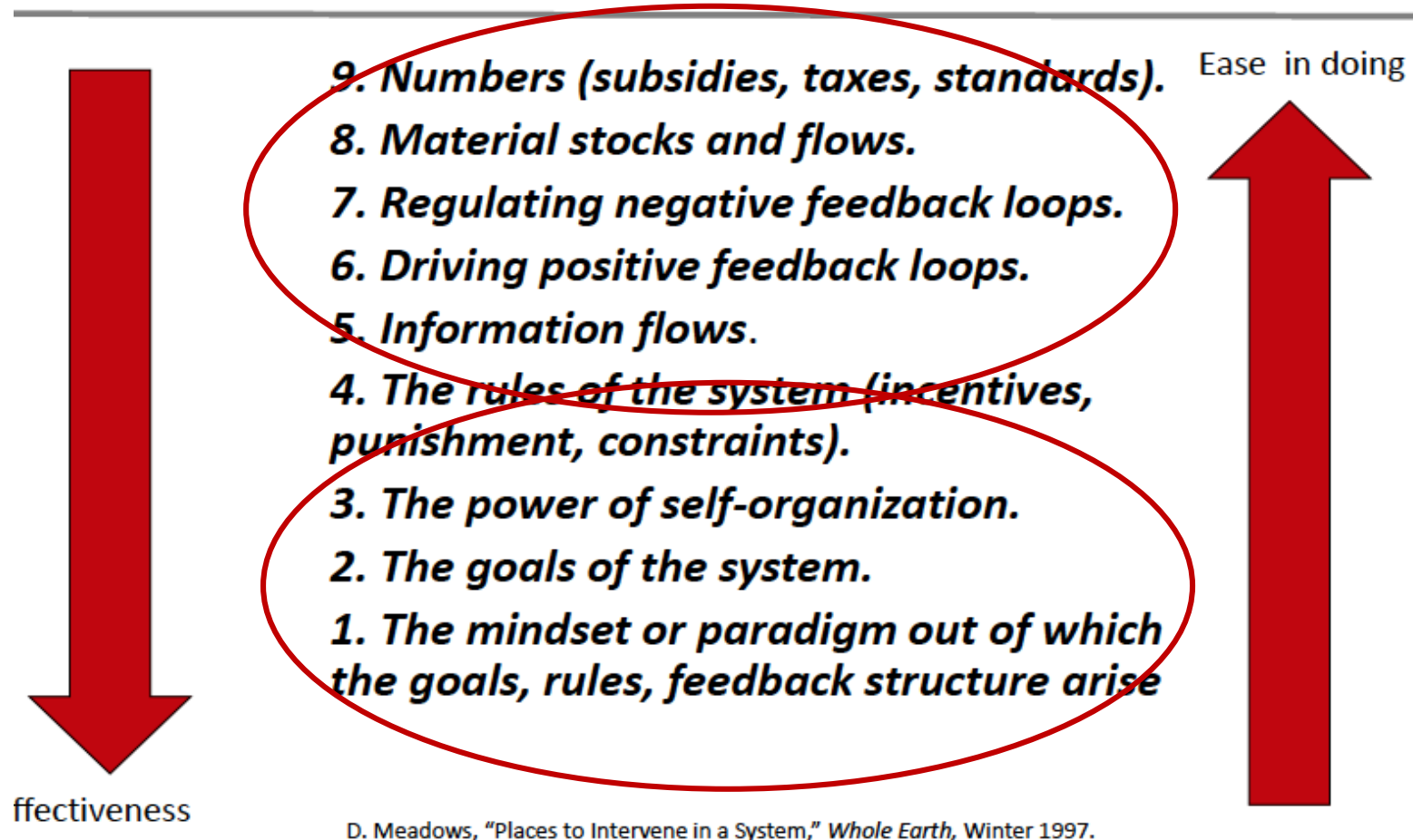
Thinking about the Future: Guidelines for Strategic Foresight
Andy Hines & Peter Bishop, 2007

What Future are we Delivering?



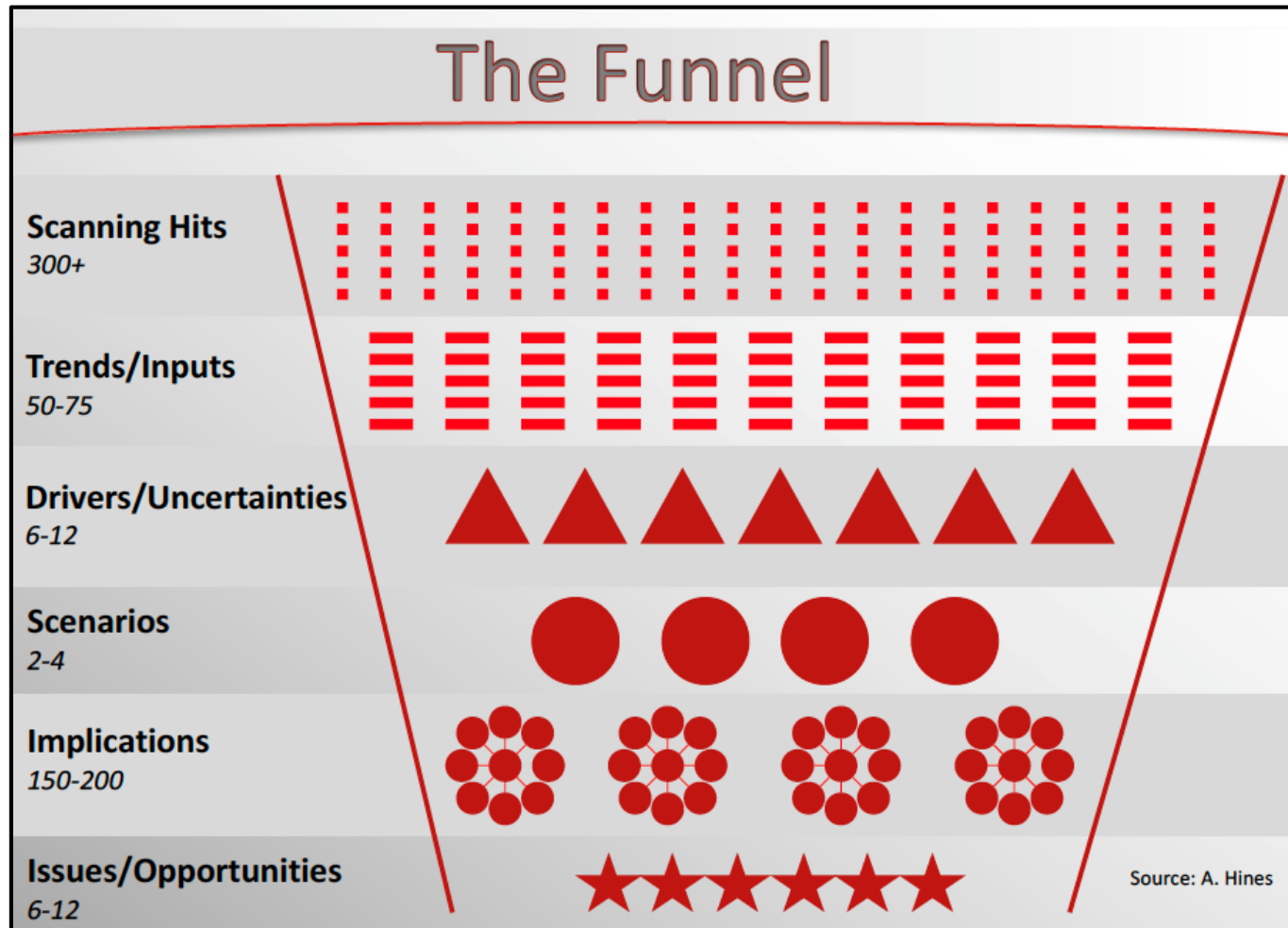
What Future are we Delivering?

Places to Intervene in a System

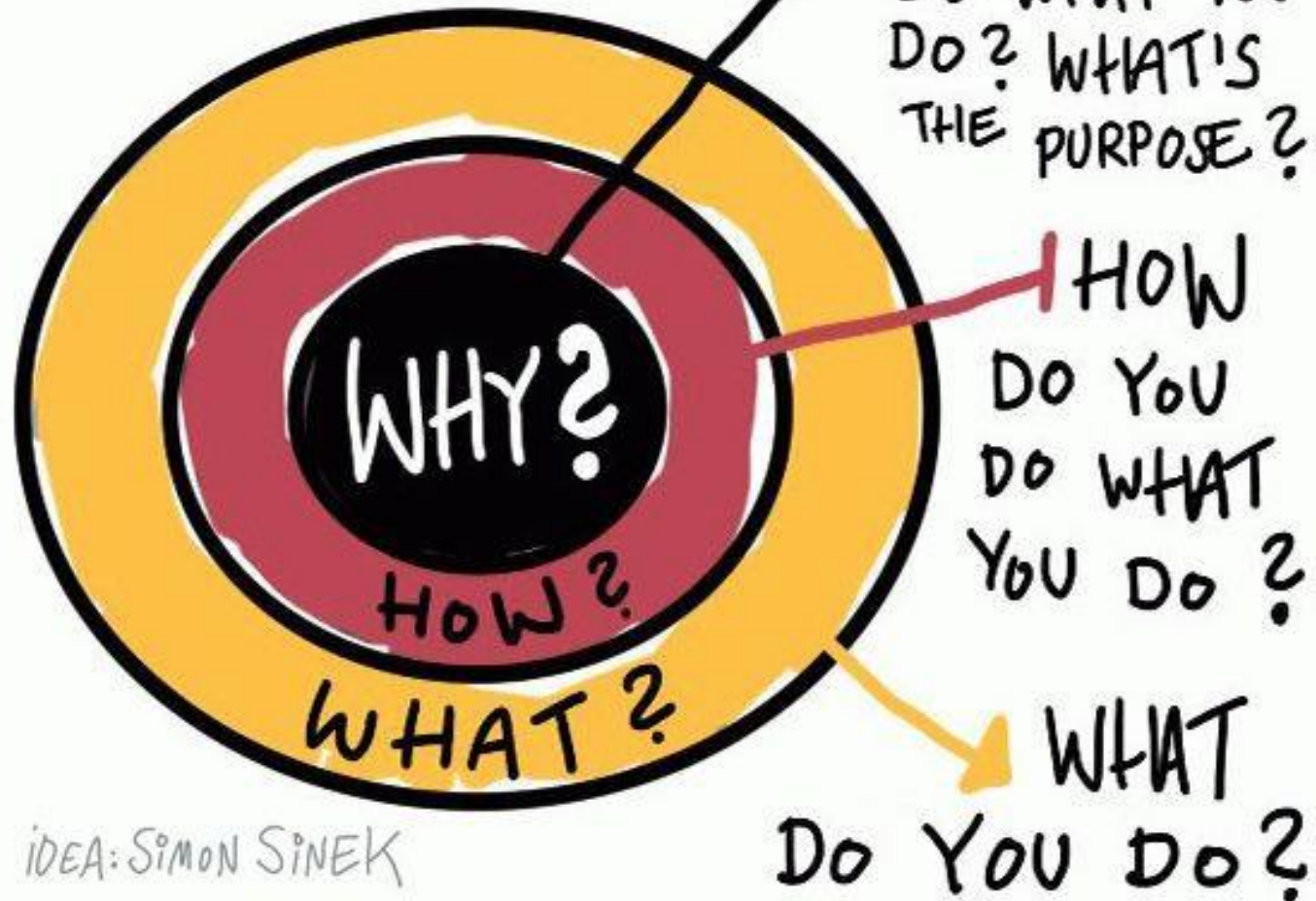


D. Meadows, "Places to Intervene in a System," *Whole Earth*, Winter 1997.

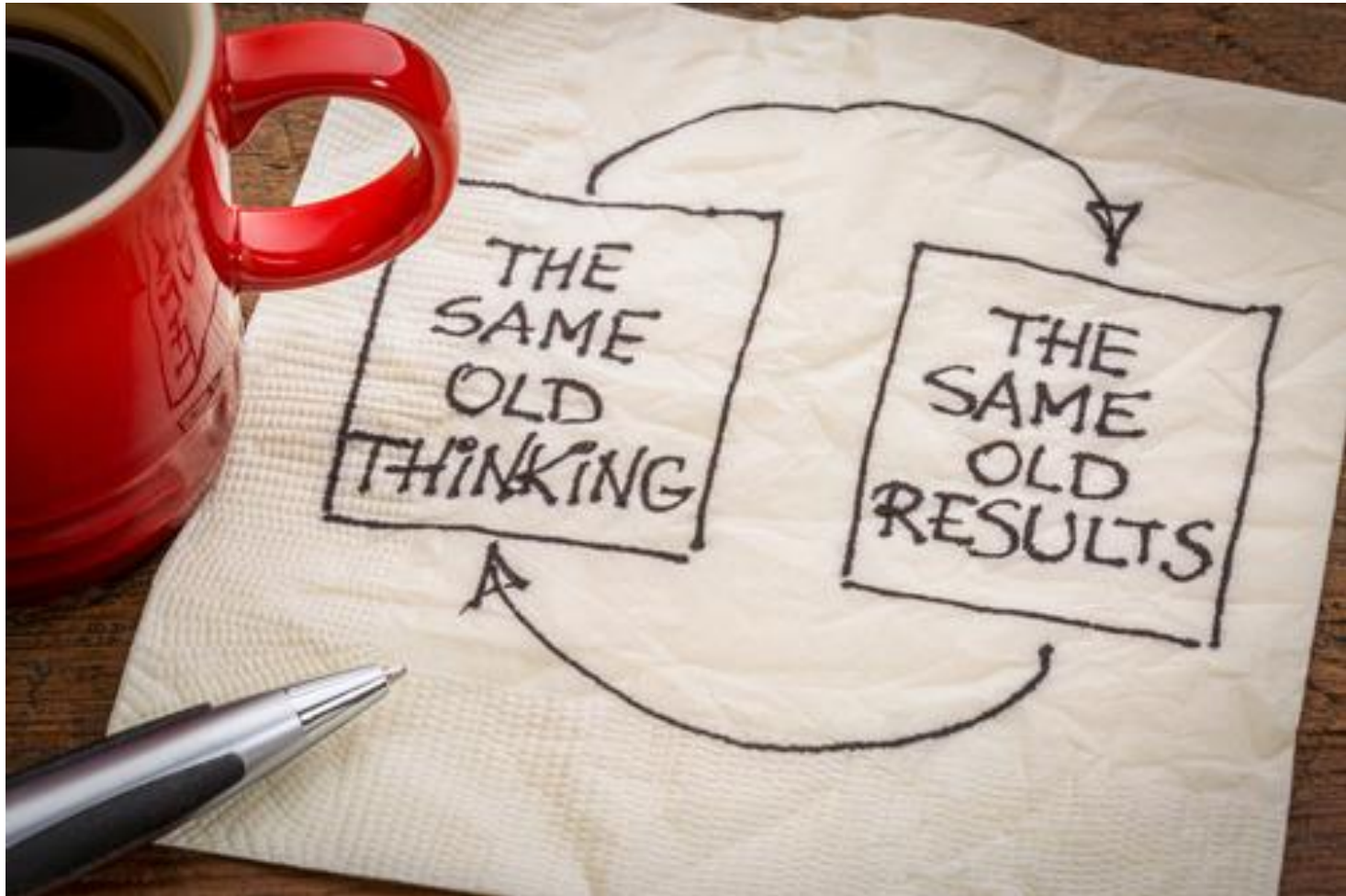
What Future are we Delivering?



GOLDEN CIRCLE

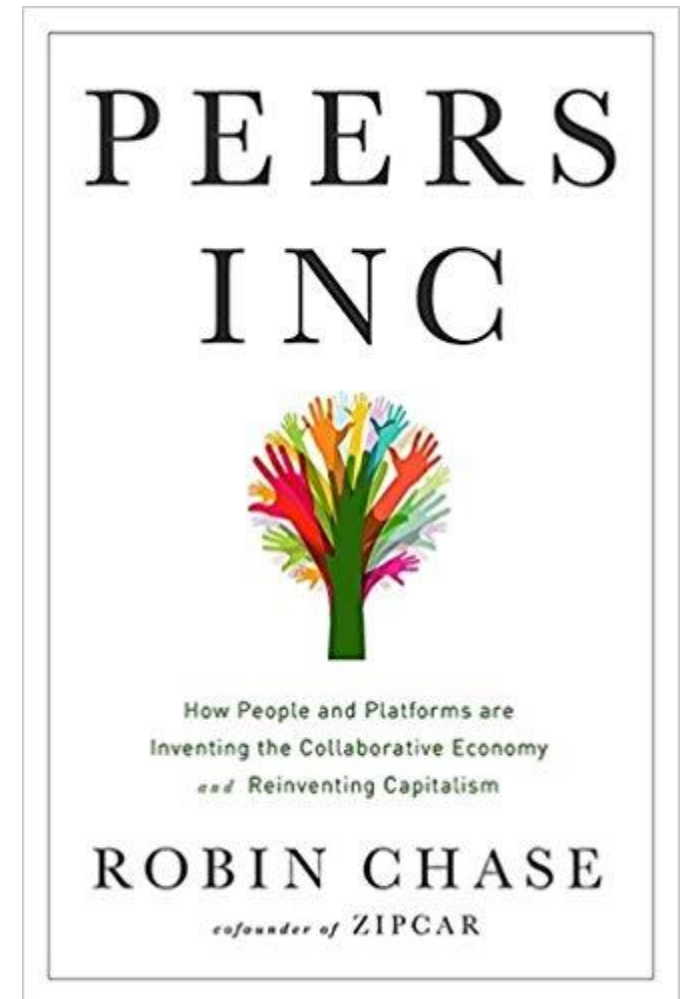


WHAT are we delivering in this new future?

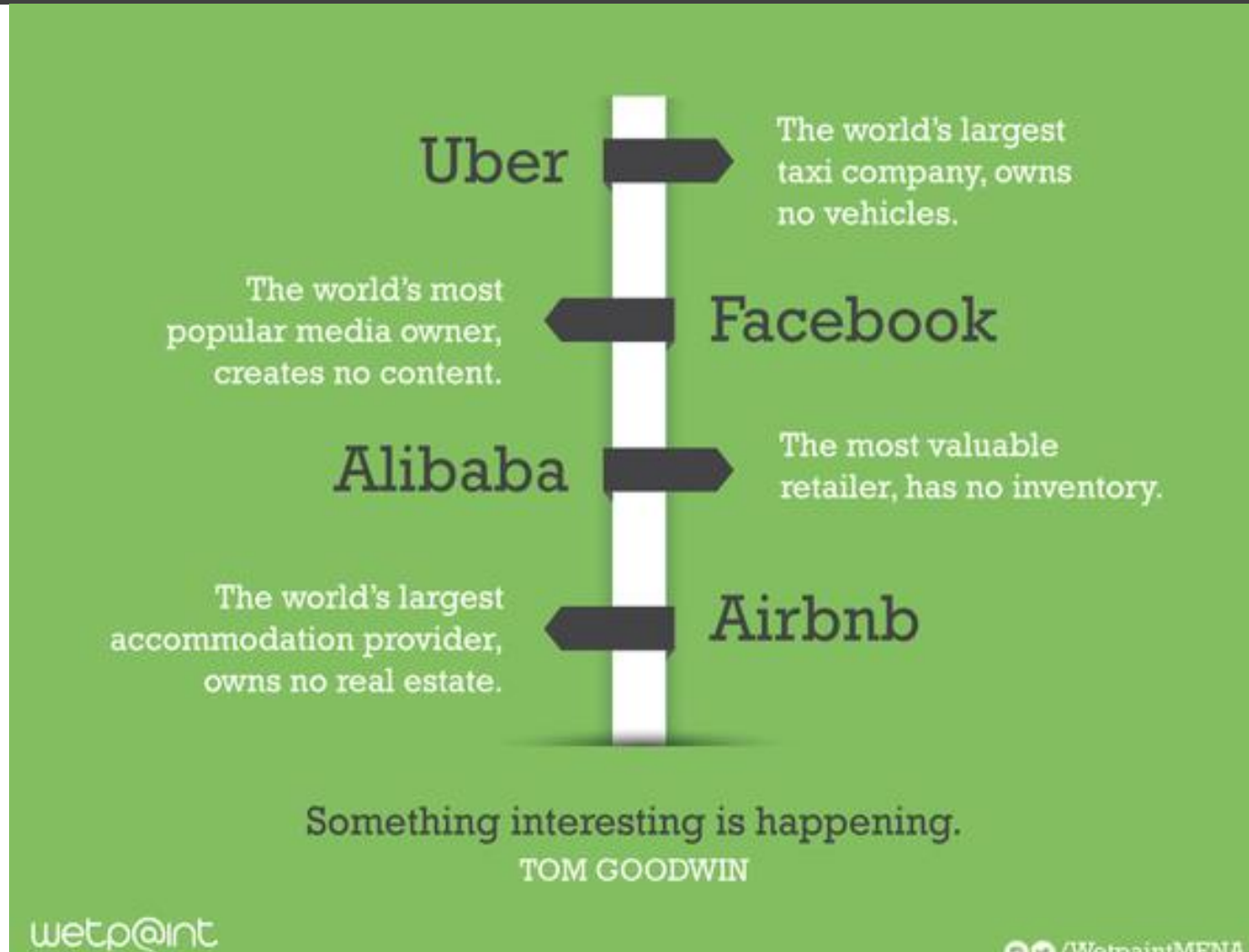


The Collaborative Economy

- Recognition of excess capacity
 - Abundance in a world of scarcity
- Platforms for participation
 - Simplify, organize, and empower
- Peer power
 - Localize, customize, specialize



The Collaborative Economy



Buildings as Products

WeWork – The Only AEC Unicorn

wework

LOCATIONS ▾

PLANS

WHY WEWORK

MISSION

ENTERPRISE

📞 1-877-441-7505

LOG IN

PLANS & PRICING

MEMBERSHIP OPTIONS

Month-to-month agreements keep things flexible.



ON-DEMAND

STARTING AT \$45/MONTH

1 DAY/MONTH INCLUDED

Our Membership is our pay-as-you-go plan. Book workspace for a day or a conference room at select locations.

STARTING AT \$100/MONTH

24/7 ACCESS

Guaranteed workspace in a common area at one location. Just bring your laptop, pick an open seat, and get to work.

A desk of your own in a shared space at one location. You'll set up shop in the same spot each day in your building.

PRIVATE OFFICE

STARTING AT \$400/MONTH

24/7 ACCESS

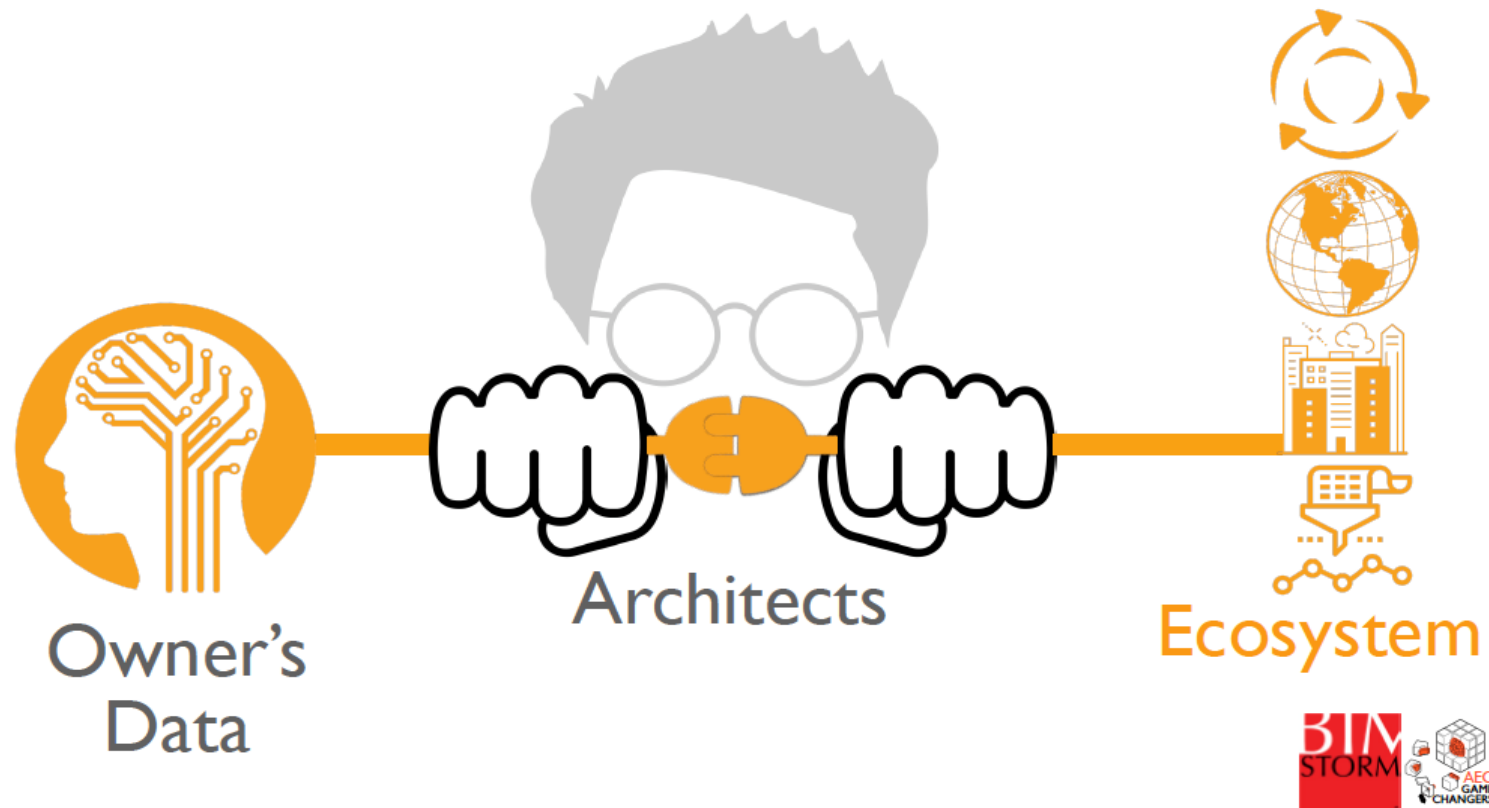
Enclosed, lockable offices can accommodate teams of any size. Fully furnished, and customizable to your company's needs.

A unicorn refers to any tech startup company that reaches a \$1 billion dollar market value. WeWork has a \$16 billion market value !!

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Peer Mentality in Our Business

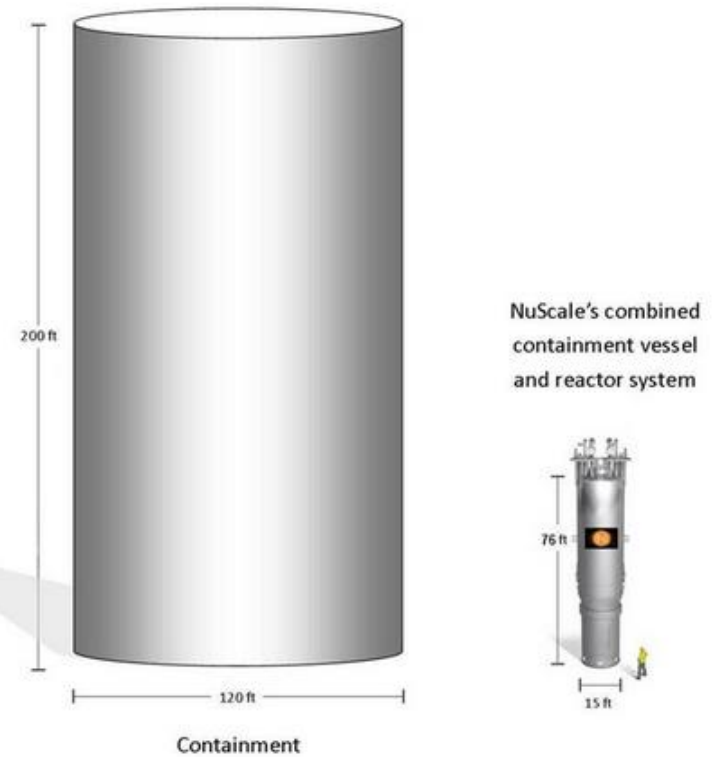
- BIMstorm – classic example in our business



Shrinking for Agility



Comparison size envelope of new nuclear plants currently under construction in the United States



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Rapidly Composable Networks

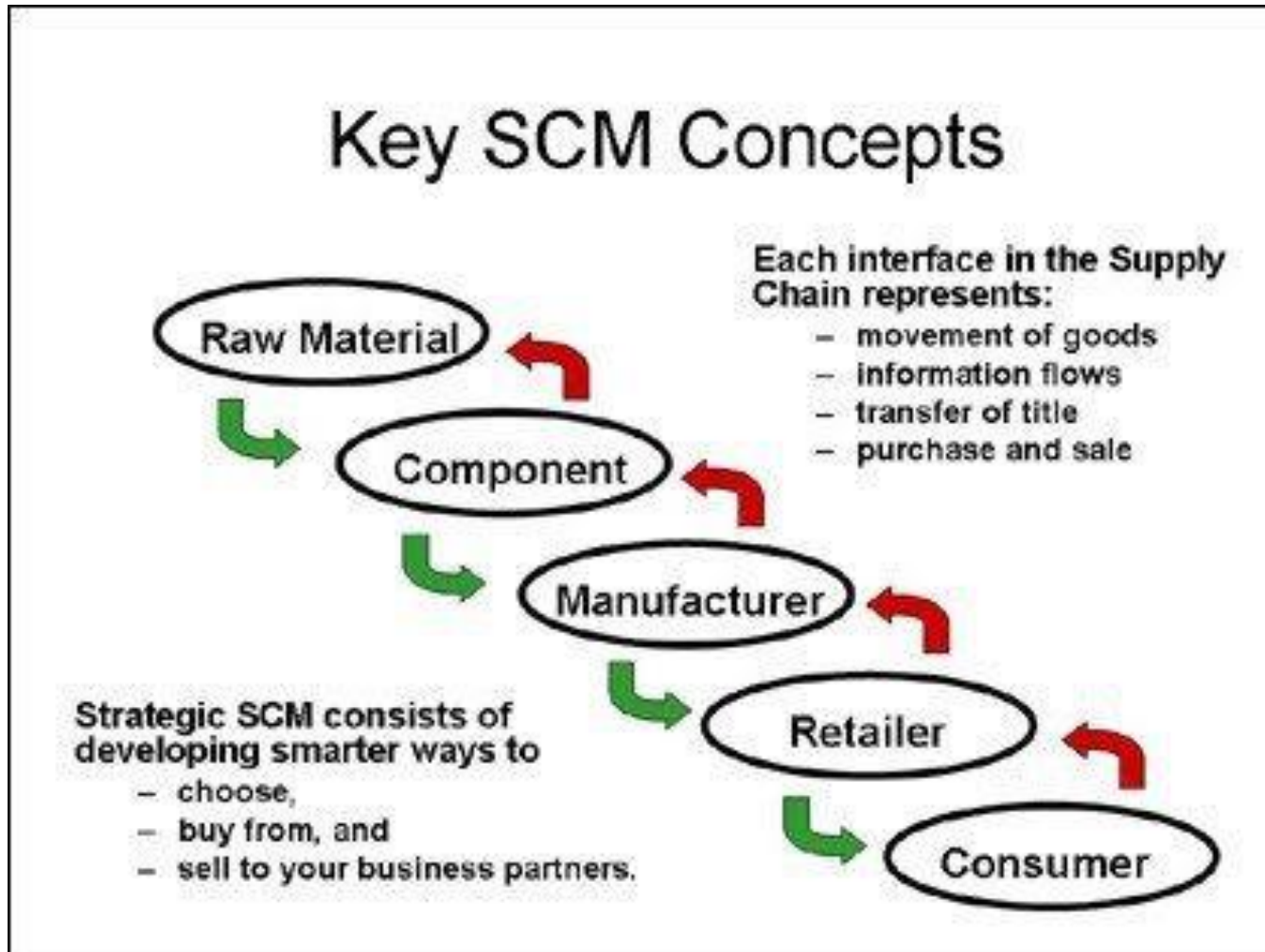
Defense Advanced Research Projects Agency

By using less expensive systems brought together on demand as needed as the conflict unfolds, these "webs" would enable diverse, agile applications. Such "mosaic" assemblages can rapidly be tailored to accommodate available resources and rapidly changing needs.

DARPA Mosaic Warfare approach

Using simple, versatile building blocks to create complex designs.

Flattening the Supply Chain



Flattening the Supply Chain

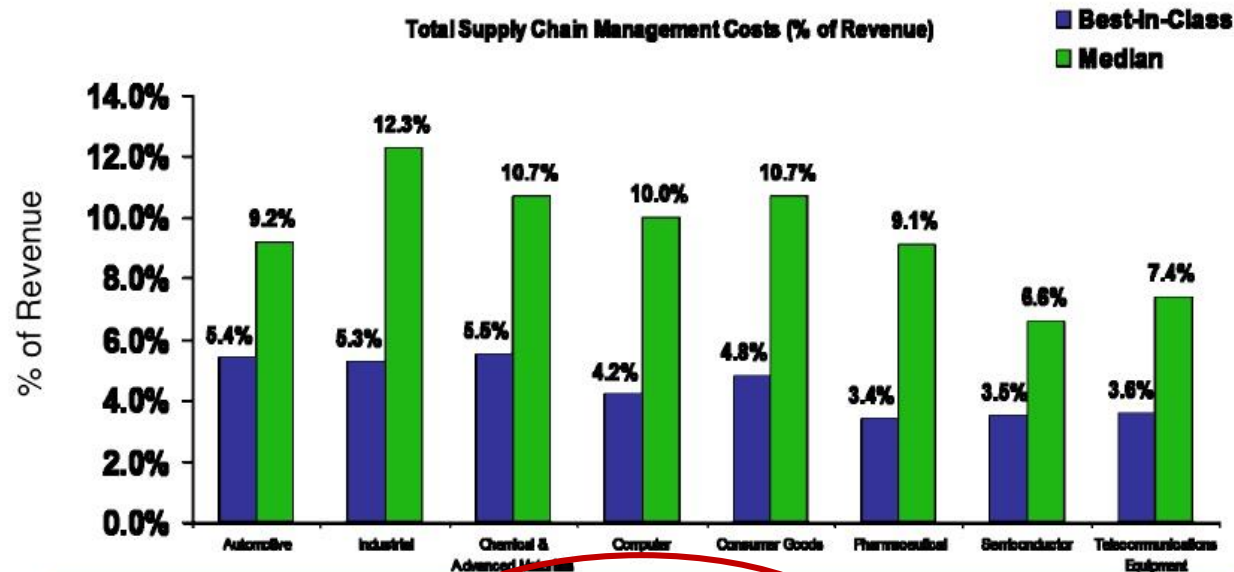
Partners Across The Globe Are

Boeing found that by removing just 1-transactional layer can reduce cost by 22% and increase profits by 262%

COPYRIGHT © 2018 THE BOEING COMPANY

Flattening the Supply Chain

Superior Supply Chain Management (SCM) has Long Been a Source of Competitive Advantage



Best-in-class Companies' Outperform Their Median Competitors with a 50% Cost Advantage

Source: **PRTM**/ The Performance Measurement Group

SCC - ISM/NAPM April 2010

SCM is a registered trademark of The Supply Chain Council, Inc. in the United States and the European Community. All rights reserved.

Supply Chain Council

HOW are we delivering in this new future?



NOBODY

RISES TO LOW EXPECTATIONS.

~ Calvin Lloyd

- Cost
- Schedule
- Quality
- Safety

WWW.SEVENQUOTES.COM

How are We Viewed as an Industry?

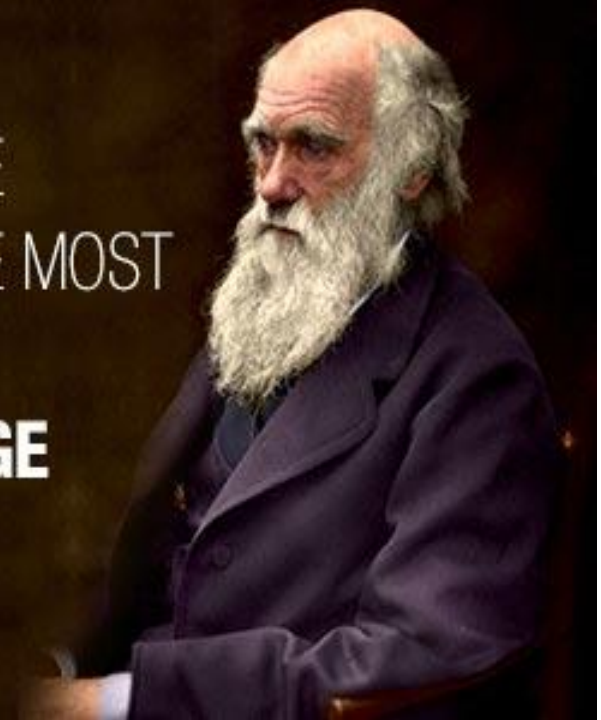
Low tech, archaic, out dated business model, wasteful, low productivity

Increasing Agility

“

IT IS NOT THE STRONGEST OF THE
SPECIES THAT **SURVIVE** NOR THE MOST
INTELLIGENT BUT THE ONE
MOST RESPONSIVE TO CHANGE

Charles Darwin (1809 - 1882)



Increasing Agility



HOW are we delivering in this new future?



Innovation Gap



Innovation Gap

It's adoption of Digital technologies, Construction is at the bottom, just ahead of "Agriculture and Hunting" according to a 2017 Global Research project conducted mby Mc Kinsey.



3-D Printed Buildings



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3-D Printed Buildings



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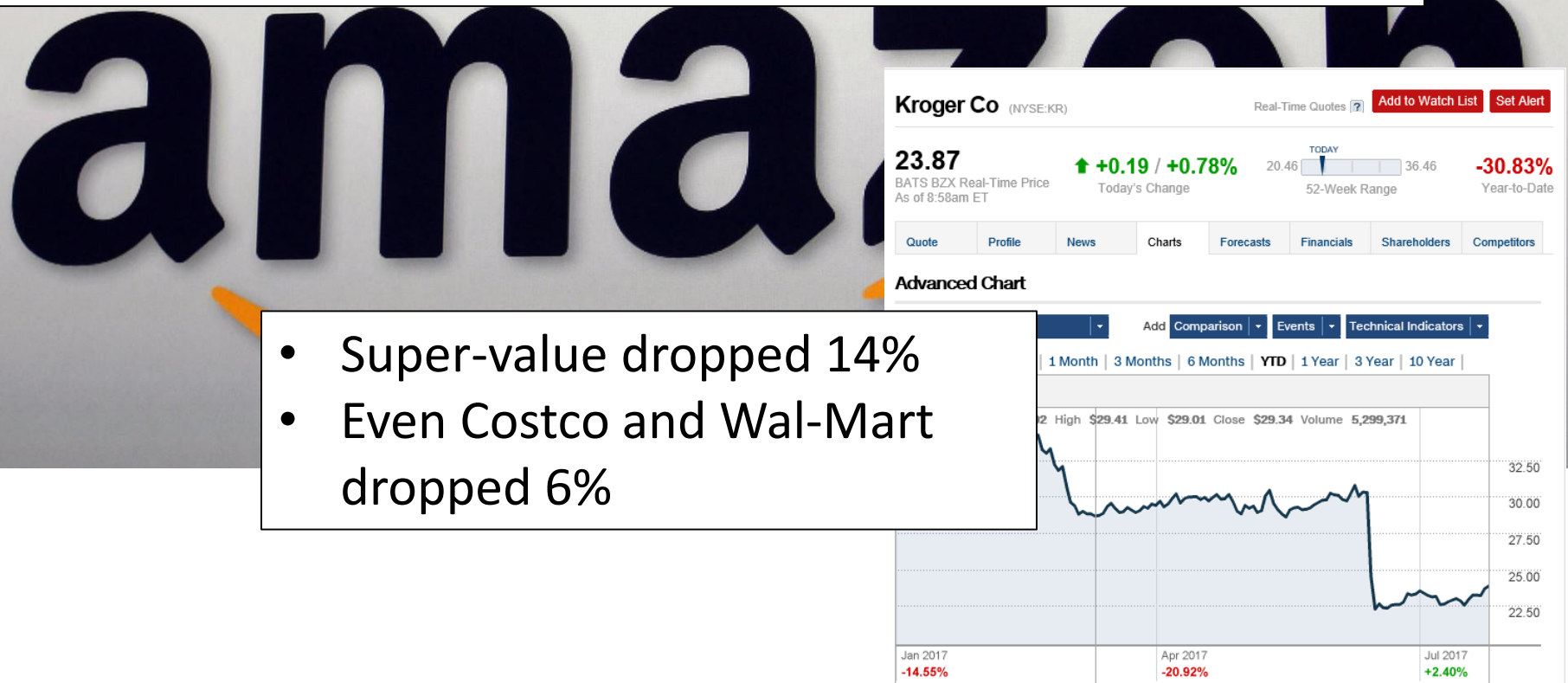
Innovation

Figure 18: Rate of technological adoption in your organization.



Source: *Make it, or break it*, 2017 Global Construction Survey, KPMG International.

- Massive change had come to the grocery industry, and it was coming from the outside-in.
- It was happening to the industry ... and not by the industry.
- And investors were placing their bets ... on the outsiders.



- Super-value dropped 14%
- Even Costco and Wal-Mart dropped 6%

Anybody Know What This Is?

He now contends that he can reduce the costs of constructing tunnels by a factor of 10 and their schedule by a factor of 14.



Elon Musk ✓
@elonmusk

 [Follow](#)

Just received verbal govt approval for The Boring Company to build an underground NY-Phil-Balt-DC Hyperloop. NY-DC in 29 mins.

10:09 AM - 20 Jul 2017



 15,815

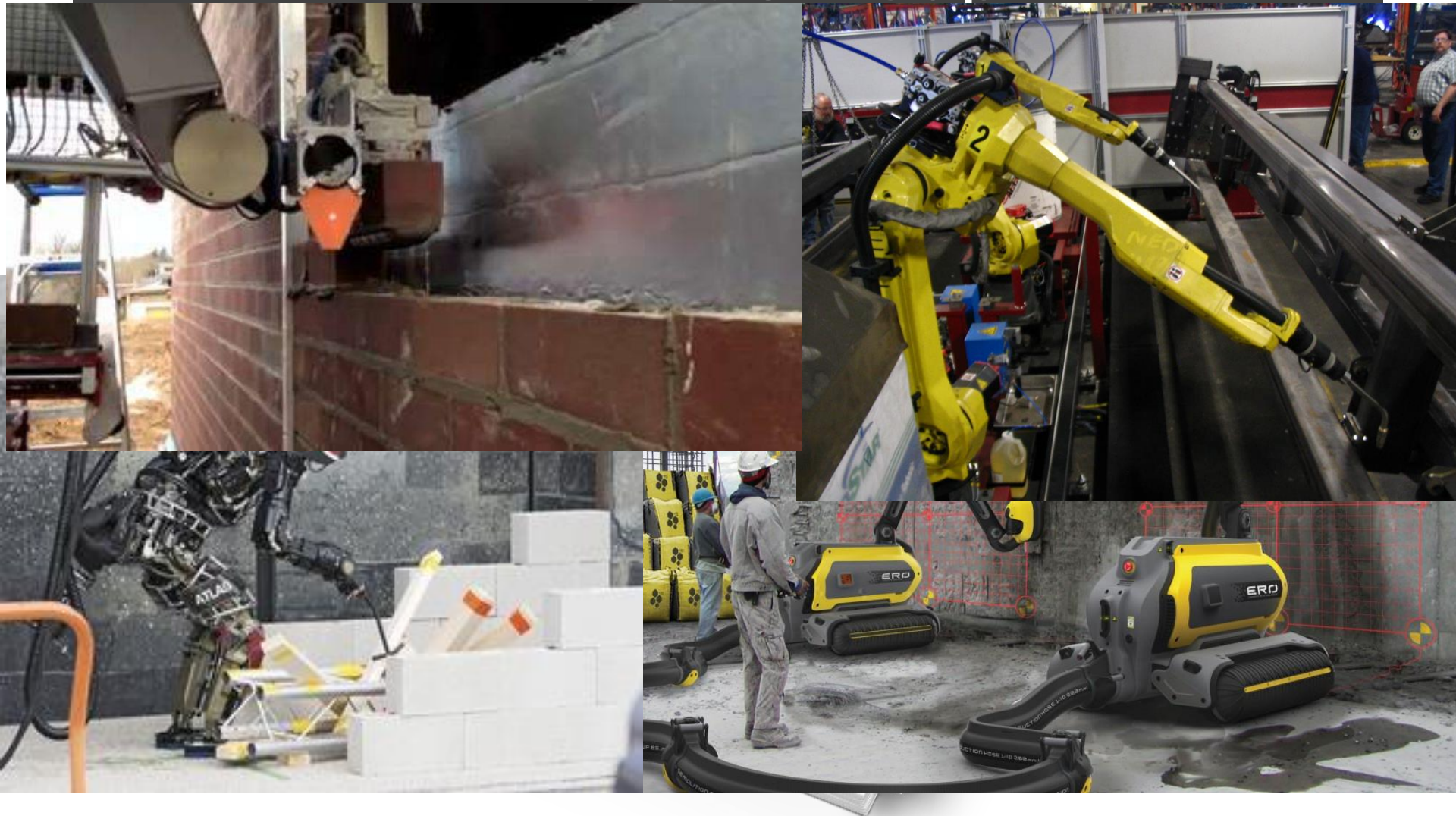


35,045



©
Cooper.ch

Innovation Gap



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The Business Imperative



HOW are we delivering in this new future?

May work for
incremental
improvement...

Plan the Work
Work the Plan

But it's not
enough today.

From Stephen Mulva,
Director, Construction Industry Institute
August 2017

***INTEL HAS PUBLICALLY STATED THEIR
GOAL OF 30% COST REDUCTION AND
50% SCHEDULE REDUCTION ON CAPITAL
PROJECTS OR THEIR SURVIVAL AS A
COMPANY MAY BE THREATENED.***

From Stephen Mulva,
Director, Construction Industry Institute
August 2017

***DOW CHEMICAL DID SOME DETAILED
ANALYSES OF WHERE THEY FIND VALUE
TO BE LOST IN CAPITAL PROJECTS AND
THEY CONSERVATIVELY ESTIMATE THAT
30% OF THE INITIAL COST CAN BE
SAVED.***

From Stephen Mulva,
Director, Construction Industry Institute
August 2017

***CII IS SHIFTING FROM TRYING TO
IMPROVE THE CAPITAL PROJECT TO
USING THE CAPITAL PROJECT TO
DRASTICALLY IMPROVE (INNOVATE) THE
BUSINESS AND THE DELIVERY OF VALUE
TO SHAREHOLDERS / STAKEHOLDERS.***

From Stephen Mulva,
Director, Construction Industry Institute
August 2017

***OUR INDUSTRY IN GENERAL, MUST
LOOK AT DISRUPTIVE INNOVATION
IN ORDER TO REACH THESE GOALS.***

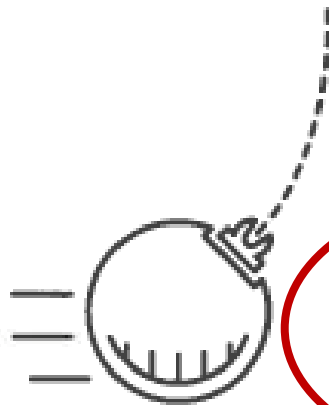
From Stephen Mulva,
Director, Construction Industry Institute
August 2017

***THE CAPITAL PROJECTS INDUSTRY
MUST INNOVATE OR RISK LOSING
CONTROL OF ITS OWN DESTINY.***

The CII Initiative

THE SOLUTION

O.S. 2.0



**FUNDAMENTAL
SWEEPING
CHANGE**

This change, known as Operating System 2.0 is a multi-industry spanning, collaborative, research supported, effort that aims to redesign industry procedures and standards with current technological advances in mind. The goal of OS 2.0 is to create a standardized, technology-enabled platform that accommodates future change and makes capital projects more financially viable and sustainable.

**RESEARCH
SUPPORTED
REDESIGN**



**JOINT
INDUSTRY
VENTURE**

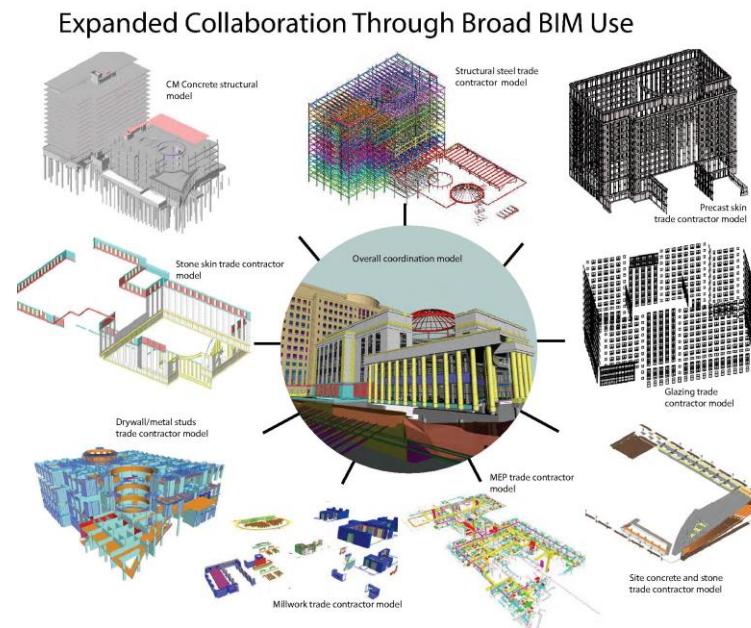


**DESIGNED TO
ACCOMMODATE
CHANGE**



Business as an Ecosystem

- Project finance
- Insurance and risk management
- Regulations, zoning and permitting



SUCCESS FACTORS

Integrating ALL users in the design-build process


Faced with the need to address project risks more effectively, the team agreed that the more parties that used model information, the better the collaboration. Project leadership pushed for a paradigm shift, spurring nearly all major subcontractors to utilize BIM in their processes.

Going beyond the traditional adopters such as MEP and structural trades, model development and use was expanded to include other key subcontractors including:

- Concrete
- Steel
- MEP
- Architectural Precast
- Glazing
- Interior drywall/metal studs
- Exterior framing/sheathing
- Millwork
- Stone
- Masonry
- Landscaping and site
- Utilities
- Spray foam insulation

These are the things that often trip up projects even when the design and construction is done well.

Business as an Ecosystem



ADITAZZ

Welcome Back

Logout

Home

My Projects

My Settings

My Account

My Profile

My Dashboard

My Reports

My Analytics

My Notifications

My Alerts

My Messages

My Calendar

My Tasks

My Documents

My Files

My Folders

My Links

My Social

My Contacts

My Groups

My Roles

My Permissions

My Settings

My Account

My Profile

My Dashboard

My Reports

My Analytics

My Notifications

My Alerts

My Messages

My Calendar

My Tasks

My Documents

My Files

My Folders

My Links


My Social

My Contacts

My Groups


My Roles

My Permissions




Design Synthesis Application

Create a library of design objects and rules using your domain expertise. Rapidly generate and update efficient code compliant room designs.




Offshore Wind Energy

Holistic scenario-based planning tool for offshore wind farms. Built in partnership with Atkins Energy, the global leader in wind energy planning.



Spatial Test Fit

Generate design test fits in minutes based on your program requirements and update your designs with ease.




Site Fit

Efficiently predict needs and generate designs for large scale housing and infrastructure projects. Built in partnership with Tata Trusts, one of India's largest philanthropic organizations.

LOGIN

ADITAZZ

SUPPORT



BREAKTHROUGH TECHNOLOGY TO OPTIMIZE HOSPITAL OPERATIONS

TRY IT OUT

ANALYTICAL APPROACH
Details 1

ASSESS CURRENT SYSTEMS
Details 2

SIMULATE AND OPTIMIZE
Details 3

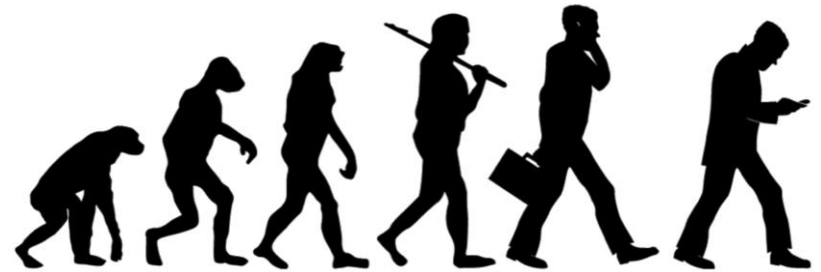
CUSTOMIZED VIRTUAL MODEL
Details 4

Operational Modeling

Make informed data-driven decisions to maximize revenue through a dynamic business operational model.

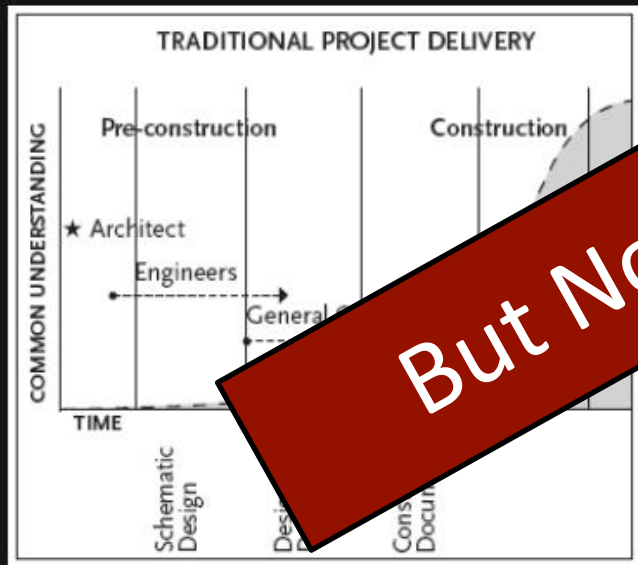
Moving Beyond Project Delivery

- Design-Bid-Build
- Design Assist
- Traditional Design-Build
- Design-Build Done Right
- Progressive Design-Build
- Integrated Project Delivery
- **Challenge Driven Project Delivery?**

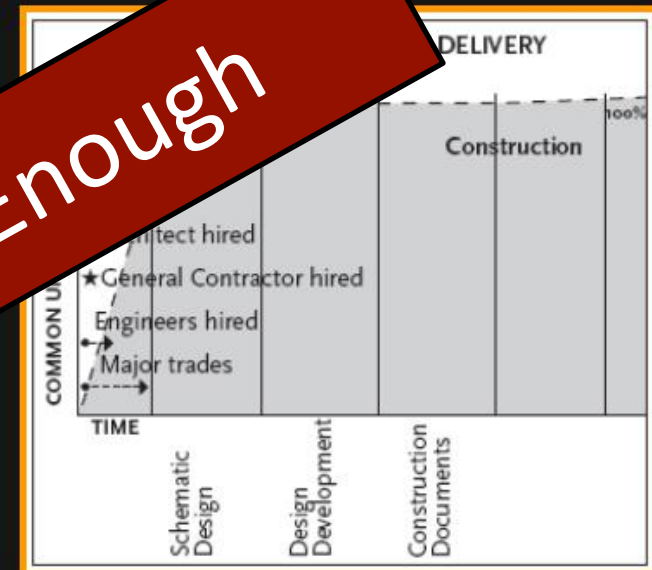


We've Made Some Progress

Why Integration Works Common understanding develops EARLY!

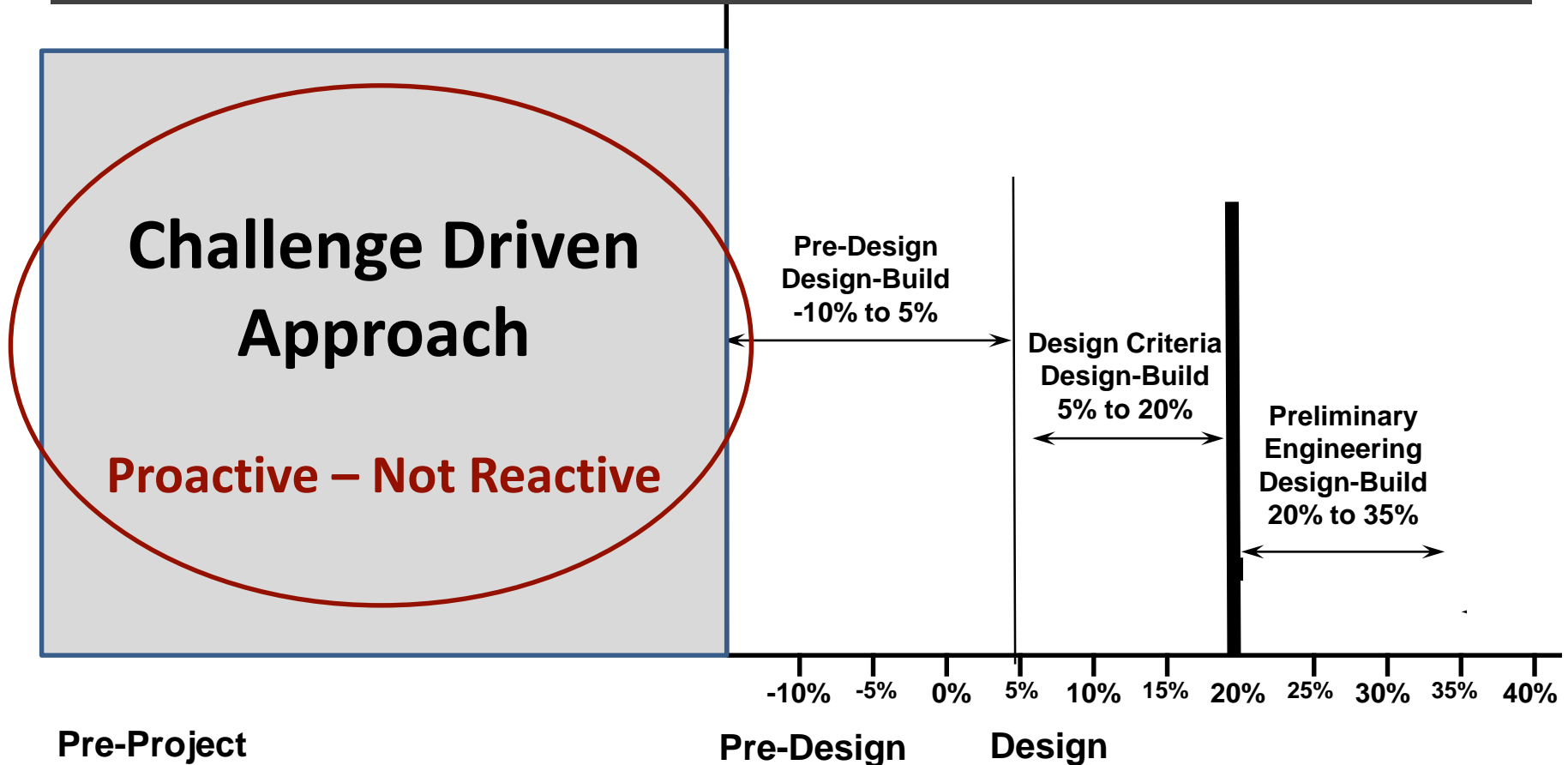


Business as usual



Integrated project delivery

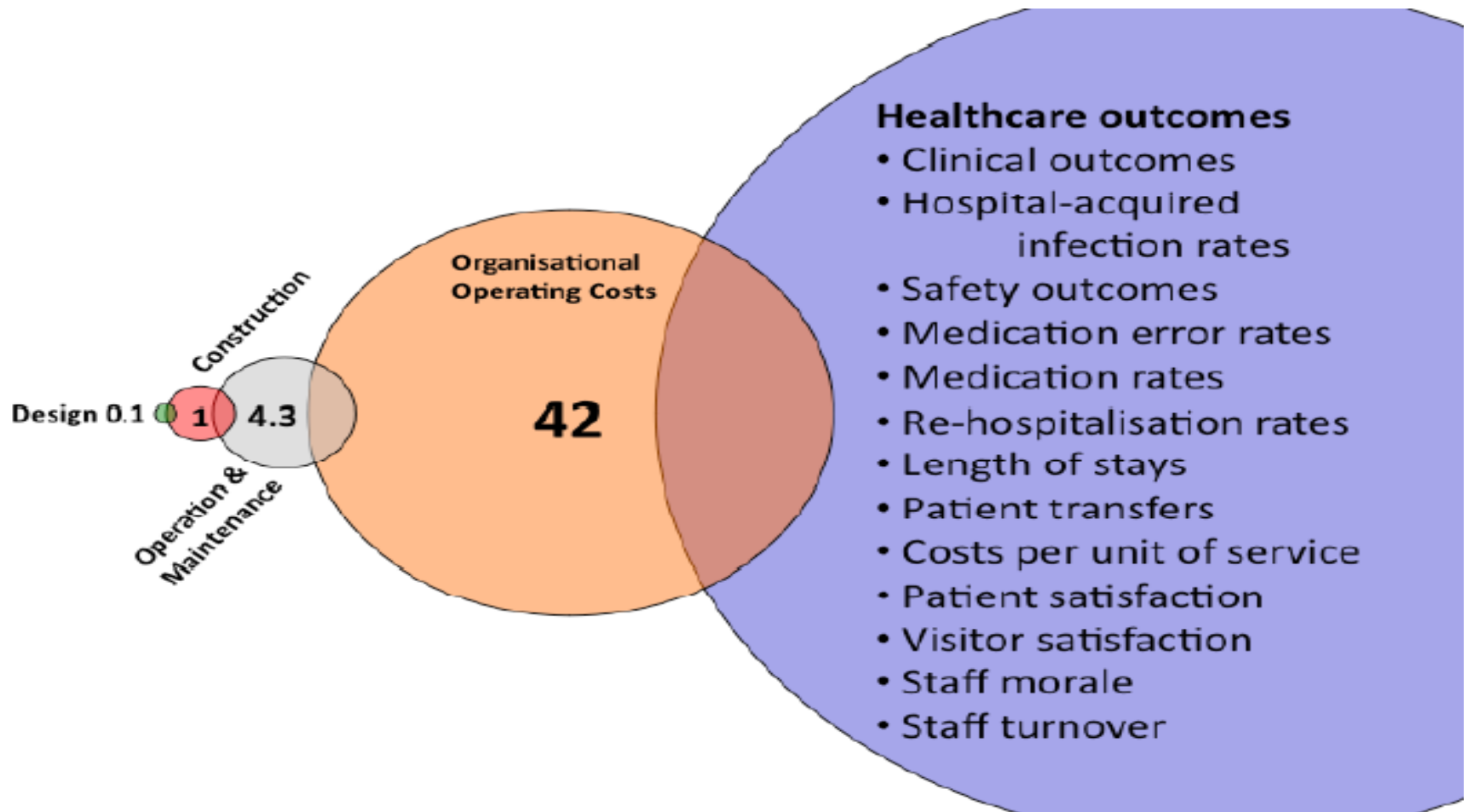
Where Engagement Begins



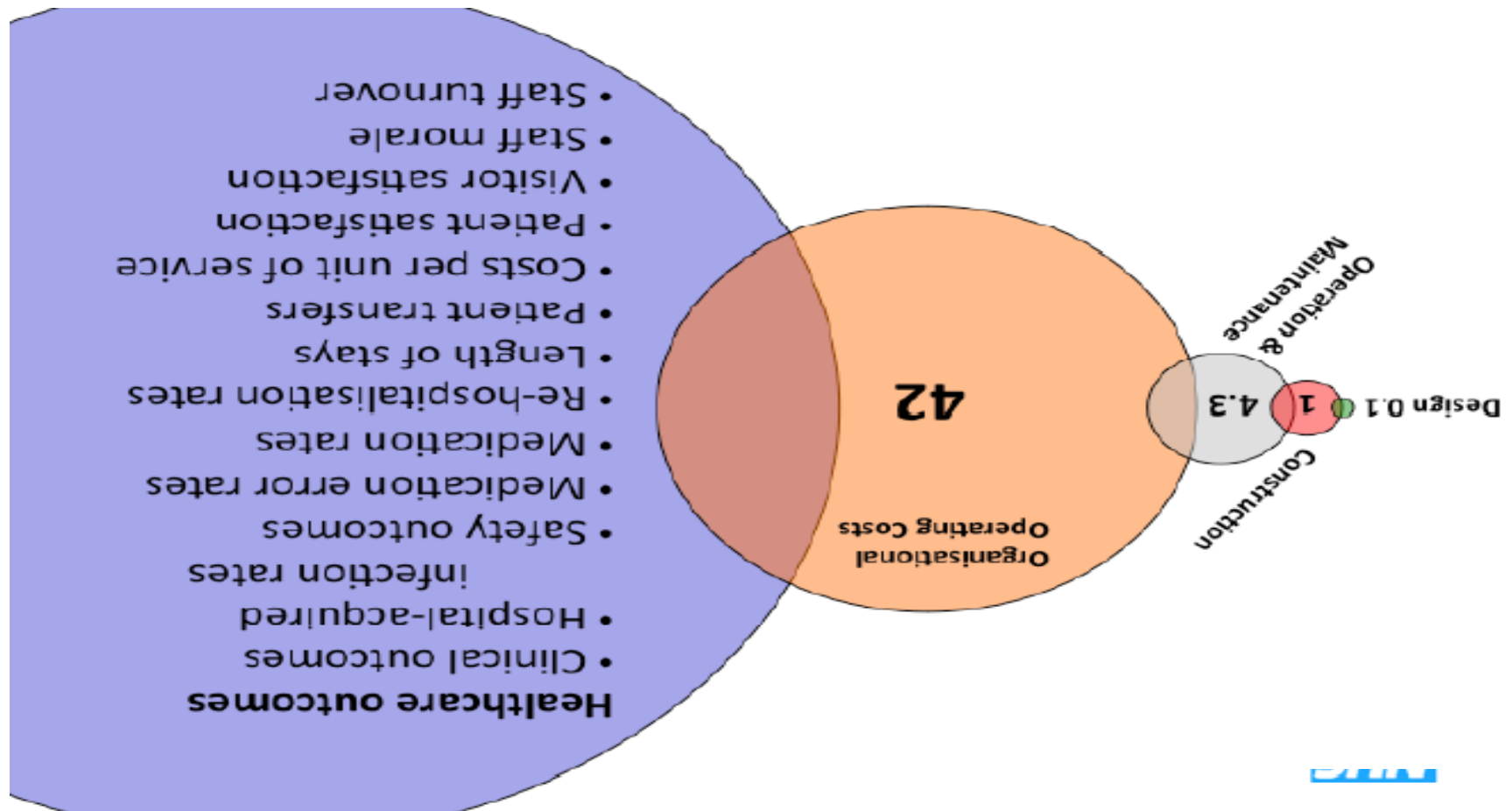
Challenge Driven Project Delivery

- It's a **relentless** pursuit of powerful and effective ways to collaborate with your clients
- Addressing **challenges that matter most** to your customers and that would have the **biggest impact**
- It's where you create **outcomes for your clients that have the most value**

Beyond Project Delivery



Challenge Driven Project Delivery Flips it Upside Down



WHY are we delivering in this new future?

4 Values Types

A. Hines

An individual view about what is most important in life that in turn guides decision-making and behavior

Traditional

Follow the Rules

Fulfilling one's predetermined role, with an emphasis on their being a "right" way to do things

Modern

Achieve

Driven by growth and progress and the ability to improve one's social and economic status....and show it

Postmodern

What's It All Mean?

A shift away from material concerns to a search for meaning, connection, and greater participation

Integral

Make a Difference

Leading edge of values change emphasizing practical and functional approaches that best fit particular situations

WHY are we delivering in this new future?

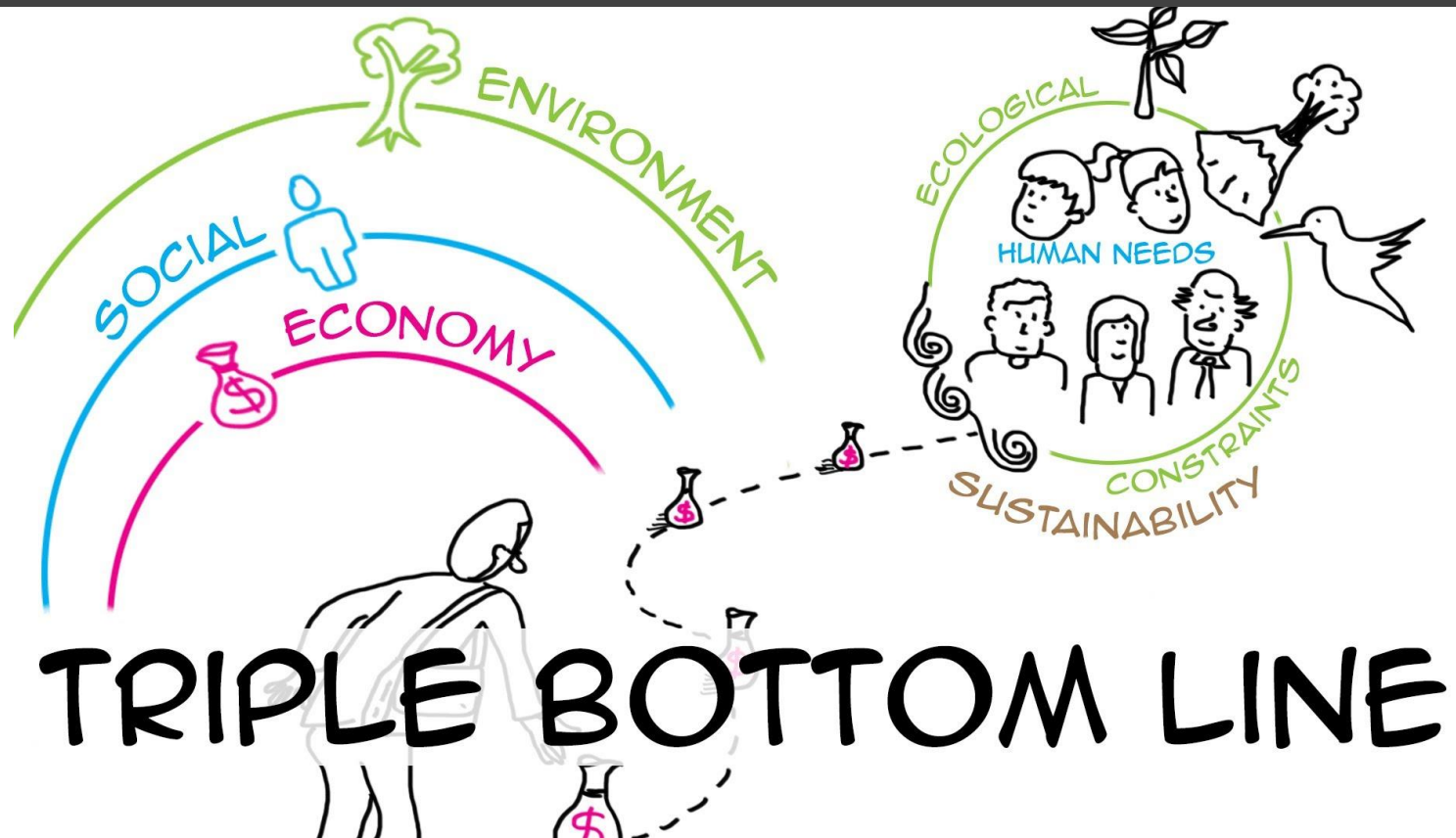
A NEW
BLUEPRINT
is needed

WANTED:

A development model that:

- encompasses long-term, holistic thinking;
- respects our social & ecological systems;
- embraces our changing 21st century culture, economy & conditions.

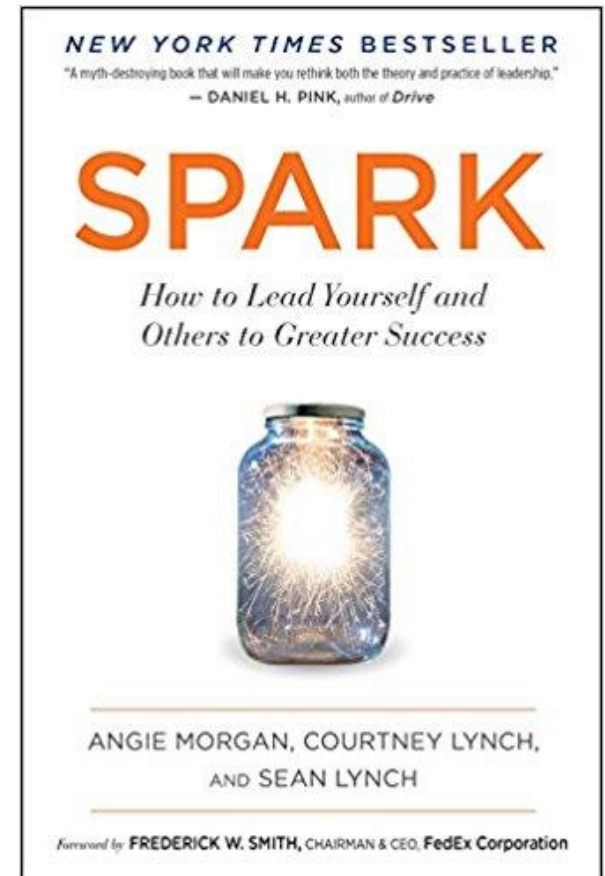
WHY are we delivering in this new future?



The Leaders We Need

SPARKS

- They are the doers, thinkers, innovators, and key influencers
- They are catalysts for personal and organizational change



Who Are the SPARKS?

- They are not defined by their place on an organizational chart
- They are defined by their actions, commitment and will.



Instead of Fanning the Flames...



Fanning the Flames

- When SPARKS are ignited, their actions can directly shape the future.
- SPARKS make things happen.
- SPARKS make things better

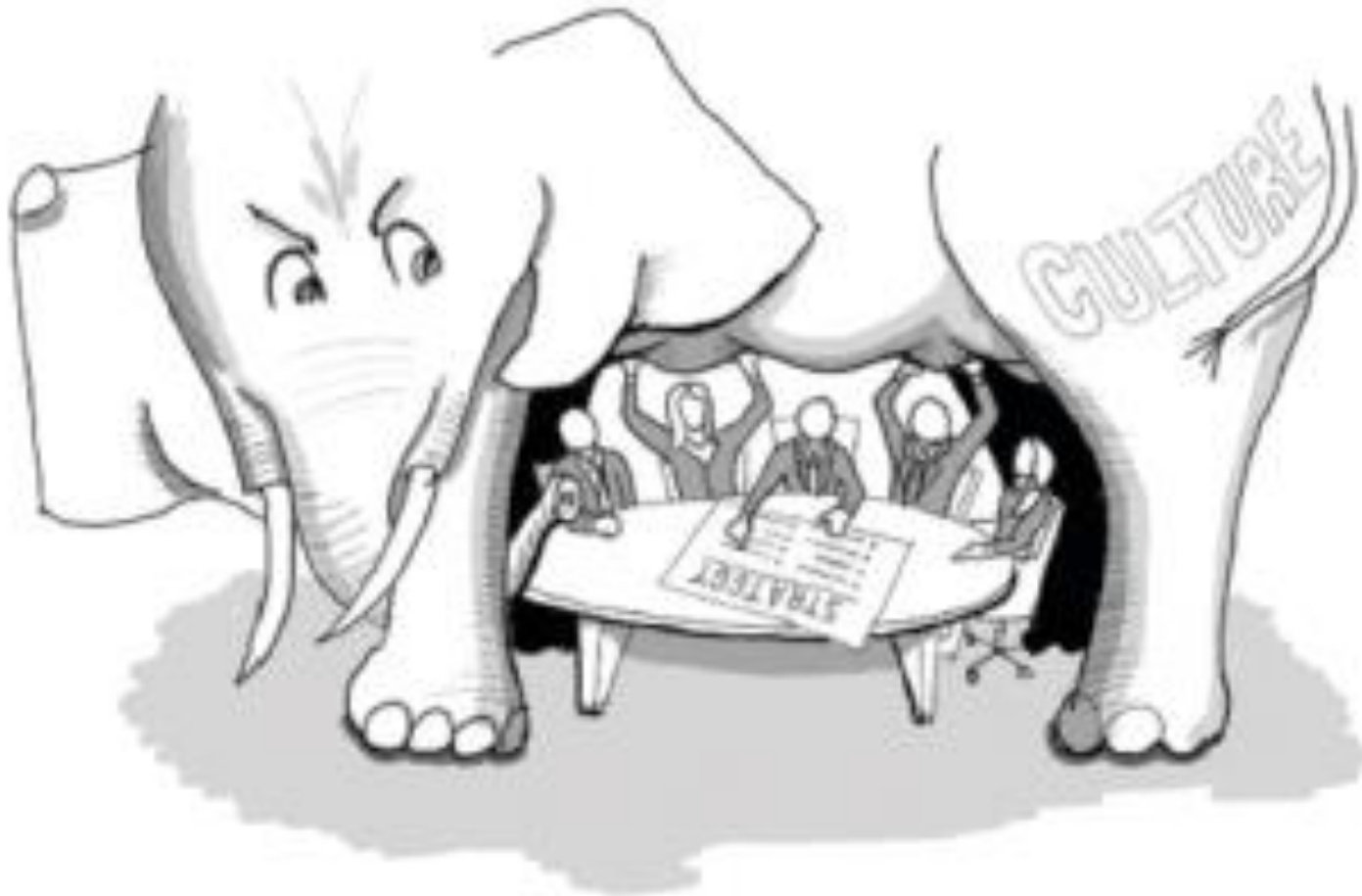


Igniting Innovation



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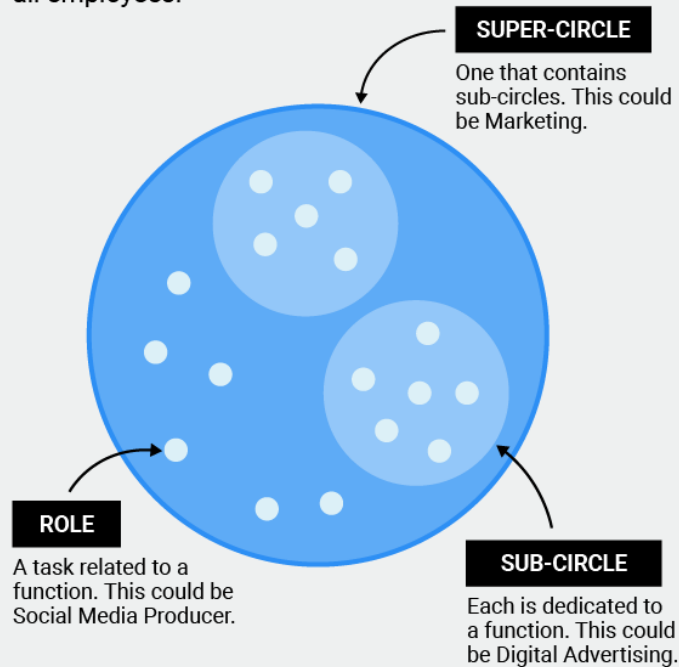
Cultural Shifts Required



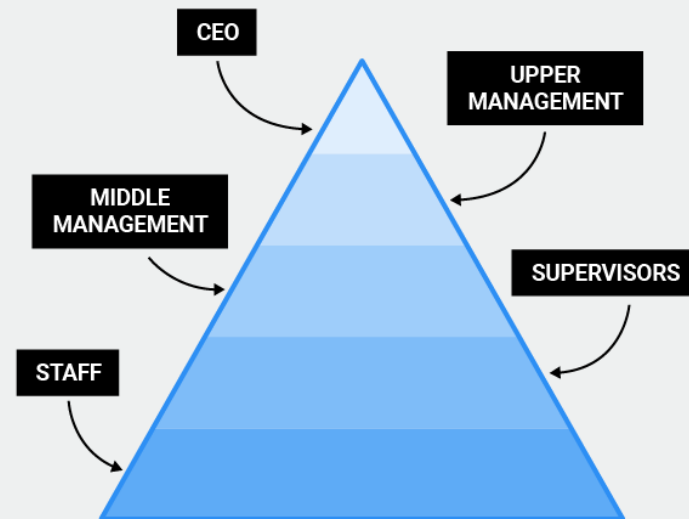
Cultural Shifts Required

HOLACRACY VS. HIERARCHY

Holacracy takes powers traditionally reserved for executives and managers and spreads them across all employees.



In a **traditional hierarchy**, layers of management establish how products are approved and monitored.



Identity – BIG Issue



No More Jobs – Just Work

NEW COLLAR JOB



Developing the Dream Team



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I Don't Want to Become a Construction Soldier





That's all Folks!

Having the Courage to Challenge & Change

- What are the assumptions you need to challenge?
 - Whenever you are getting close to the edge of disruption, the assumptions become louder and harder to ignore.
 - If it feels like it may change the fundamentals of your business forever, you are on it.
- The ideas that are too precious to challenge are the very ones you must examine

Explore the Unanswered Questions

- **What if? What's possible? Where else?**
- *Need to lean into the complexity of the most technical aspects of design and construction*
- *Don't shy away from the challenges, trying to protect a traditional business model*
- *Willing to take risks to develop and define new ways forward*

Sacred Cows MUST Be Disrupted



Advanced Education @ Univ of Denver



On-campus MS

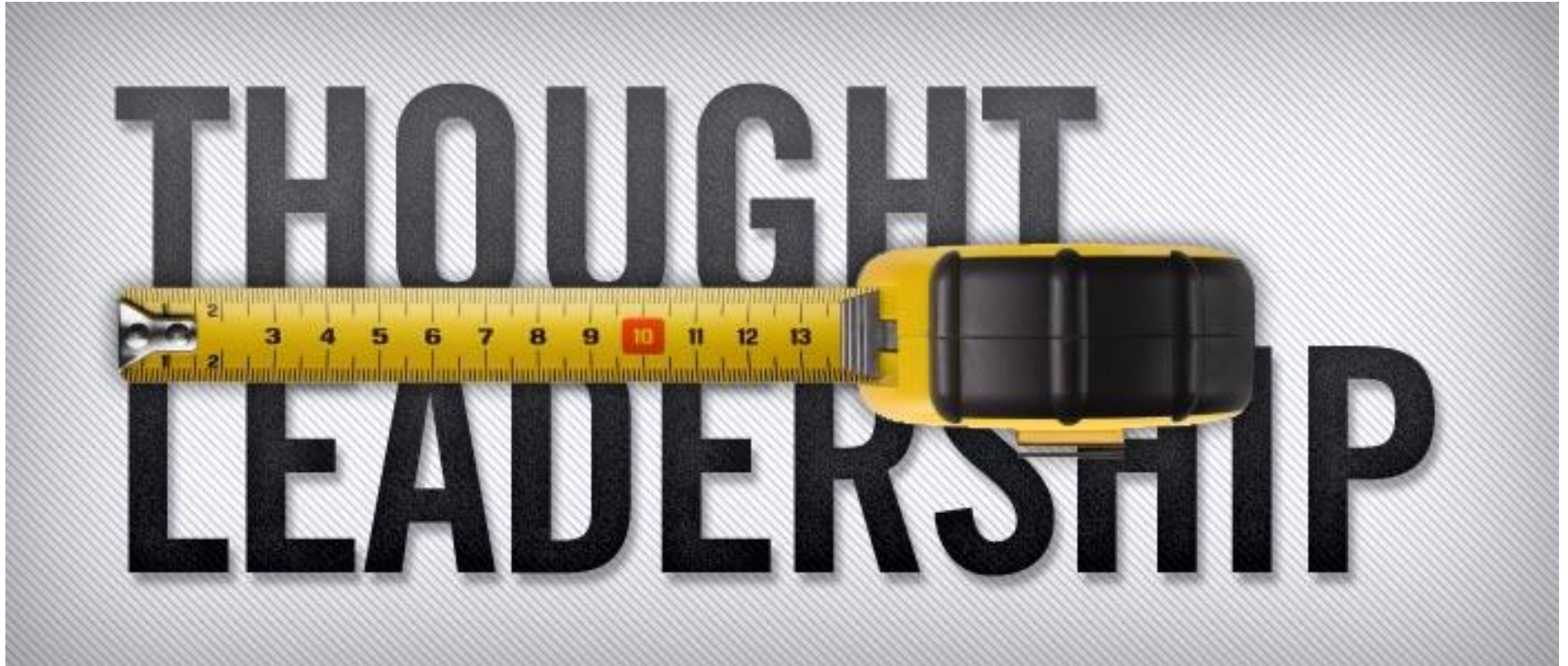
A 12+ month, full- or part-time, 48-credit, on-campus program.

Online Executive MS

An 18+ month, 48-credit program taken online in a synchronous classroom experience. One three-day course in residence is required.

New
Individual courses
online

Changing Thought Leaders into Market Leaders



Come discover the power of your own purpose



Women in Construction Leadership Boot Camp

A three-day, mission-oriented, outcome-driven, intensive “Boot Camp” to engage with other women leaders to effect transformative change in the construction industry.

April 29-May 2, 2018

The Nature Place Conference and Education Center
Florissant, Colorado

Register: <http://danielsrsvp.du.edu/WICBootCamps2018>

Thank You!

Questions?

barbara.jackson@du.edu

Transforming Leadership and Culture in the AEC Industry