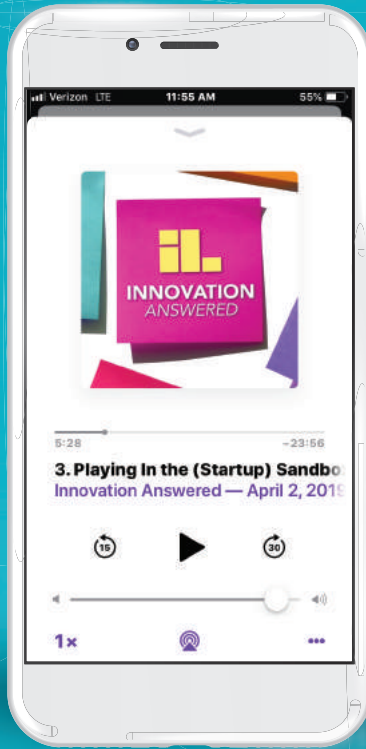INNOVATION LEADER

Global Innovation Hotspots

Special Issue
15 Global Innovation Hotspots

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Sam's Club &
the US Air Force

WE KNOW INNOVATION AT LARGE, ESTABLISHED COMPANIES IS HARD.

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Startup Culture in Big Companies
S1 E8

What's Digital Transformation, Anyway?
S1 E5

Inside the Mind of Clay Christensen
S2 E1

www.innovationleader.com/podcast

Table of Contents

ON THE COVER:

British illustrator Mike Lemanski took a cue
from vintage travel posters in creating this
issue's cover—though don't take the pin
placement too literally. (We didn't discover
any innovation hotspots in Greenland.)

What's Next for Innovation Leader Members?

All Innovation Leader members get full access to our research, case studies, reports, templates, best practices, benchmarking, live calls & webcasts, executive roundtables, and other resources. Plus, exclusive discounts to all of our upcoming events. Here's a look at what we have in store.

PRINT MAGAZINE

Our print magazine includes in-depth articles and interviews with innovation executives who are breaking new ground. Our 2019 editions include:

- **Fall 2019** — The Best: Impact Awards, 10 Best Innovation Centers, Most Influential Corporate Innovators

RESEARCH REPORTS

We produce quarterly research reports on innovation topics, including metrics, benchmarking, labs, and more. We're covering these topics next:

- **Q1 2019** — Ecosystem Development & Co-Creation
- **Q2 2019** — Startup Engagement: Best Practices
- **Q3 2019** — Benchmarking Innovation Impact
- **Q4 2019** — Innovating to Drive Efficiency

POINTERS

Several times each year, we compile a handful of the most useful and compelling pieces of expert advice from our Strategic Partners into Pointers, a downloadable eBook. Here are the topics we're covering next:

- **June 2019 —** Getting an Innovation Program Started
- **Nov 2019 —** Upgrading Your Innovation Initiative

IN-PERSON EVENTS

Join us for one of our interactive events including off-the-record discussions with your peers and exclusive visits to corporate innovation labs. Mark your calendars with these upcoming events:

- **New York City Deep Dive:** Getting Started and Expanding Innovation — May 7
- **London Field Study:** Smart Risks & Bold Experiments – June 27-28
- **Boston Field Study** — Sept. 19-20
- **Impact 2019** — Oct. 22-24
- **Roundtables** — Chicago, Minneapolis, Boston

COMPANY COVERAGE

Our website is continually updated with case studies, articles, and webcasts, all delivered weekly to your inbox. Here are some of the companies we've covered recently, or we're highlighting next:

- Lululemon
- American Greetings
- Cisco
- Pfizer
- Lowe's
- TGI Fridays
- Target
- Lyft
- Daimler
- Fidelity
- JetBlue
- Rent the Runway
- Shubert Org.
- Georgia Pacific
- Kellogg's
- Uber
- EmbraerX
- Revera
- AXA Next
- Nature Conservancy
- Tyson Foods
- Land O' Lakes
- Baker Hughes
- Daimler

For more information about becoming an Innovation Leader member, visit innovationleader.com/join, or email membership@innovationleader.com

A Quick Assist?

WE WORKED HARD TO BRING YOU this issue of *Innovation Leader*, so I'm hoping I can turn to you for some help.

Our fall issue will look at the best of corporate innovation, from at least three different angles, and I'd love some input from you.

We'll highlight some of the finalists of the 2019 Impact Awards, which honor innovation initiatives that have delivered extraordinary outcomes. To do that, we need lots of great submissions by June 21st. You can enter at innovationleader.com/awards. (Winners will be honored at our Impact 2019 gathering in San Francisco, Oct 22-24.)

We're going to assemble a list of 10 of the best corporate innovation labs and workspaces around the world. What have you seen recently that has impressed you? Drop me a note at the email address below.

We're also putting together a list of the 10 most influential corporate innovators—at any level, from the CEO on down—at a company with more than $1 billion in revenue or 1,000 employees. Who should be on it? Again, drop me a note at the email address below.

In this issue, we take you to visit an "incubator store" in Dallas, where Sam's Club tests out new technologies; the headquarters of PACCAR, in Bellevue, Wash., to talk about the future of trucking; the capacious Chick-fil-a "Hatch" innovation lab in the Atlanta suburbs; and the US Air Force's new Kessel Run Experimentation Lab in Boston, just a few steps away from *Innovation Leader* HQ.

Our editorial intern, Dave Sebastian, reported that last story, and he also handled the lion's share of the work on our cover package, a list of the top cities around the world for corporate innovation activity. We looked at roughly 50 cities to get down to our list of 15. We're grateful for Dave's work this spring. And also sad to say goodbye to Claudia Rocha, our superstar marketing intern. We wish them both the best.

Between now and the end of the year, we'll be doing in-person events in London, Boston, Chicago, Minneapolis, and San Francisco, and we'd love to have you join us. Info about all of our F2F stuff is at innovationleader.com/events, or sign up for our email updates at innovationleader.com/email. (On Twitter and Instagram, we're @innolead.)

I'm eager to hear your thoughts on this issue—or get your help on my three items above!

Scott Kirsner, Editor & Co-Founder
editor@innovationleader.com

"The Americans may need the telephone, but we do not. We have plenty of messenger boys."

William Preece,
British Post Office (1876)

1

How Can You Create Productive Ties With Legal, Compliance & Security Teams?

By Scott Kirsner

INNOVATORS ARE ATTRACTED to the open road—and high speed. But in large organizations, their desire to move fast and explore new terrain often comes into conflict with colleagues in the compliance, legal, and information security departments. They've succeeded in their professions by putting up guardrails and warning signs that keep everything safe and under control. Often, innovators can regard them as the "long arm of the law," while staffers in the compliance, legal, and information security groups view the innovators as "Fast and Furious"-style street racers with no concern for safety.

What's the formula for getting these two very different personality types—each with fundamentally different incentives and rewards—to work together productively?

That was the central question we asked in researching our report, "Innovation & Risk: Productive Ties with Legal, Compliance, and Security Teams," released in December 2018. Here's a glimpse at some of the insights we uncovered; the full report includes advice and case studies from innovation executives at ADP, Avanade, BBVA, BNP Paribas, Hospital Corporation of America, Reliant Energy, and Sanofi.

How Do You Engage?

It's a good thing that 54 percent of our survey respondents report that they are involving colleagues in compliance, legal, and information security at the earliest stages of projects. Nearly a quarter say they wait until they have a prototype built, and just 10 percent say they wait until it's time to do market testing. Nine percent don't tend to engage those colleagues until they're ready to launch a product.

Among the innovation leaders we interviewed, the consensus was that it is never too early to start identifying the risk management groups you will need to work with; building relationships and defining how you will interact; and briefing them on concepts you're developing.

"It seems to be the norm among many teams that we go to compliance, regulatory, legal, HR, [and] finance once we know what the idea looks [like,] and once we've drafted the business case, and once we've solicited sponsorship," says Natalija Jovanovic, Head Digital Catalyst at Sanofi, the $40 billion French pharmaceutical company. "My approach was completely opposite. My compliance, and regulatory, and legal colleagues, as well as HR and finance col-

Overall, we tend to engage with colleagues in information security, legal, and compliance roles

AT THE EARLIEST STAGES OF A PROJECT	**54**%
WHEN WE HAVE A PROTOTYPE OR MOCKUP	**24**%
WHEN WE ARE READY TO DO MARKET TESTING	**10**%
WHEN WE ARE READY TO ROLLOUT	**9**%
NOT APPLICABLE	**3**%
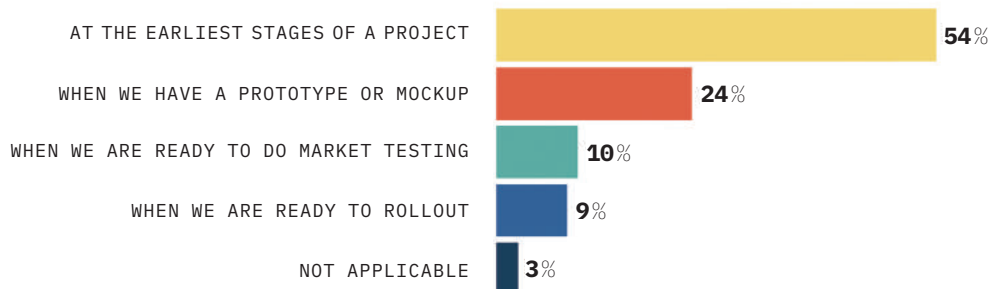
leagues, were some of the first people to whom I went, even when the idea was nothing more than an eggshell. I think that approach was not only helpful to me, but they were usually eager to contribute their expertise and identify potential issues early on. I think they also enjoy being part of the creative process."

How Do You Achieve Alignment?
Frequent meetings, conference calls, and other communications can help get innovation teams aligned with colleagues who provide input on risk and compliance issues. About one-third of our survey respondents said they interact with compliance and legal colleagues on a "frequent" basis; that number dropped to 16 percent when we asked about colleagues who work on information security—perhaps because not every new product has a digital or software component.

But some teams actually have legal, compliance, and information security colleagues "embedded" with them, available for guidance on a daily basis. That number was 8 percent when we asked about legal and compliance and 7 percent when we asked about information security. But roughly half of respondents said they consult risk management colleagues on an "as needed" basis (55 percent for legal and compliance, and 51 percent for information security). All of our respondents said they have at least some interaction with legal and compliance colleagues, while 4 percent of respondents said they don't interact with information security colleagues.

Creating Exceptions, Changing Regulations, and Working with Startups
There are sometimes instances where an innovation team may want to create a "sandbox" environment for testing a new concept; develop a shorter version of a lengthy and detailed contract; or get a lighter-weight security review to work with a startup on a pilot project.

"If this is the first time the standard operating procedure has to bend, understand the risk profile and don't ask for the whole enchilada," advises Alexandra Pelletier, a former Director of Digital Innovation at Boston Children's Hospital. "Start small with a limited area, or for a specified amount of time, to evaluate the risks."

One anonymous survey respondent at a large health insurer noted that "policies can be changed or modified, [but] pick your battles... policy and regulatory changes are a lot of work,

How well-aligned do you feel with colleagues in information security, legal, and compliance roles?

WELL-ALIGNED **20**%

SOMEWHAT WELL-ALIGNED **58**%

NOT WELL-ALIGNED **22**%
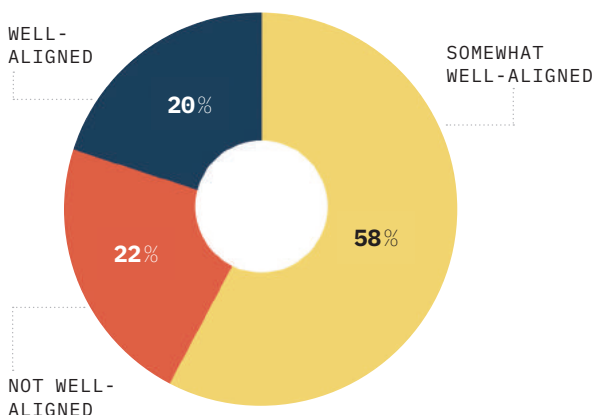
and they are slow. Will you be on to the next thing by the time you get what you need from a policy?" Innovation teams also need to be sensitive to introducing so much risk that they start creating excessive friction with the rest of the organization.

From 'Necessary Evil' to 'Net Positive'
Can every innovation team live in a world where they see compliance, legal, and information security colleagues as a "net positive" rather than a "necessary evil," or somewhere in between those two poles? There's only so much that attentive listening, regular lunches, and even embedding staffers on your team can do.

Senior leadership knows that compliance, legal, and information security are crucial functions of the company. So if those same leaders also believe that innovation needs to be a meaningful part of the company, they need to be involved in ensuring that the right metrics, incentives, and oversight are in place so that new offerings can be developed, tested, and rolled out at a reasonable pace, with the appropriate inputs from risk managers.

As one anonymous survey respondent suggested, senior leaders in some organizations may need to consider adjusting the mandate of compliance, legal, and information security groups so that they aim "to facilitate innovation through managing risks, instead of [facing] significant consequences for taking any risks whatsoever." ⬢

Tim Vanderham, Chief Technology Officer at NCR Corporation, takes a selfie with the group.

The NCR Corporation is known for selling the first mechanical cash register.

Field Study: **Atlanta**

DECEMBER 2018

Our 2018 Atlanta Field Study brought more than 50 leaders together to discuss strategies for cultivating talent and building competitive advantage. We toured the offices of NCR, Honeywell, Comcast NBCUniversal's The Farm accelerator, Mercedes-Benz USA, and Chick-fil-A's "Hatch" Innovation Center.

Participants use sticky dots to vote during a workshop run by Digital Scientists.

Kelsey Alpaio of Innovation Leader and Burunda Prince-Jones of Comcast NBCUniversal's The Farm.

Participants got a sneak peek at an array of not-yet-released Mercedes-Benz vehicles.
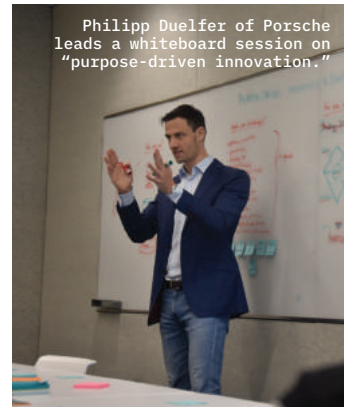
Philipp Duelfer of Porsche leads a whiteboard session on "purpose-driven innovation."

Field Study: **San Francisco**

FEBRUARY 2019

Our 2019 San Francisco Field Study brought more than 60 executives together to discuss strategies for scouting emerging trends and technologies. We toured the W.L. Gore Innovation Center, Target Open House, the Bolt makerspace, AppDynamics, Levi's Stadium, RocketSpace, and Andreessen Horowitz.

Participants hit the field at Levi's Stadium in Santa Clara, home of the San Francisco 49ers.

Algernon Callier, VP of Strategic Innovation and Emerging Technology at Universal Parks and Resorts.

Amy Benzinger of Cisco's CHILL and Linda Tong of AppDynamics.

Arthur Liberian and Sean Nazarian of Planbox.

Participants interact with demos at the Target Open House store.

Diego Ortiz Vega of ExxonMobil chats with Beth Devin of Citi Ventures.

Day one concluded with a visit to Target Open House.

Changing the Game

Excerpts from recent Innovation Leader online stories featuring C-level execs

Abby Johnson

ABBY JOHNSON, CEO OF FIDELITY INVESTMENTS

If It's Not Fun, Make It Easy

Inertia is profound in our industry. And because financial services is an industry that doesn't have a high "fun factor," people tend to be anxious to engage in financial planning. We have to coax people to want to be engaged in financial planning. We try to make it easy for them—make it pleasant and generally palatable. When you say to most people, "Oh, why don't you spend your free time thinking about your retirement?" you get a big thud. It's not surprising that almost anything new [that we introduce] takes a while to transition. ...

Scale is critical. We focus a lot on building scale around our repeatable processes, and there's been tremendous deflation in financial services for over a decade now, and that pressure, I believe, will continue. So it's really important for all of the standard processes around opening an account...all the things that are not that exciting, to be really efficient. ...

The backbone of the financial services industry is still very much [running] on aged technology, and it's very interconnected, so it's not that one company can just change it. It requires everybody to want to go down this path towards a more efficient financial infrastructure.

MARVIN ELLISON, CEO OF LOWE'S

Strengthen the Core

How much better can you be? How much better can you be for shareholder return and for creating an environment that's great for your associates to work [in]? We're on a journey not to be a good company but to be a great company, and part of that is the awareness that we can be better.

...When you look back at when we made capital investments the last five to seven years, you can determine quickly that the focus of the company had shifted from the core retail business to other things—being a smart home business to being an insurance restoration business, having joint ventures globally that didn't pay off to the degree they should. ... [B]y doing that, the capital allocation was spread away from core fundamental things like having a world-class supply chain [and] having modern merchandise systems...in

Marvin Ellison

the store to create seamless and limited-effort jobs for the associates.

... You have to invest your capital in maintain-

Brian Cornell

ing, strengthening the core of your business. ... We're just revisiting those things—what we're calling it is "retail fundamentals." Retail fundamentals is just a term for, how do you get back to the basics of great product presentation in the store and online, great staffing and training, being in stock...and the ability to have a multiple-platform business to serve customers the way they want to shop? It's getting back to those basics [that] we think will unlock tons of opportunities for us.

BRIAN CORNELL, CEO OF TARGET

Play Your Own Game

[Ten years ago,] there were questions about Target's place in retail. ... We quickly realized we were never going to win if we played someone else's game. We were still running Target.com as a separate business—different buyers, different inventories—and a half-dozen fulfillment centers around the country trying to serve the entire US. ... [W]e knew we couldn't build distribution centers fast enough to go head-to-head with Amazon. But it was clear we already had a coast-to-coast network, with more than 1,800 potential distribution points—but until that moment, we only thought about them as stores.

[T]hey had a lot more potential. We've been aggressively investing in reimagining our physical stores. ... We consider our stores our single biggest competitive advantage. They function as service centers, fulfillment hubs, and they're incredible showrooms for inspiration.

This [past holiday] season, our digital business outperformed the industry by over 50 percent. And that's largely because three out of every four digital orders was fulfilled by a store. ... Consumers still love to shop great stores.

JON MCNEILL, COO OF LYFT

Define Your Mission

As I started to look at the [ride-sharing] space...I started to [ask] the question, "Are we at 'peak car?'" ... And I started to think about what that would mean to be at a sub-scale manufacturer [like Tesla, where I worked previously] as we enter this period of peak car. ... The little players are not going to survive, especially if you don't have a healthy balance sheet. ...

The two founders of Lyft saw a different vision for cities. ... Cities are built around cars and parking. About 38 percent of the land in LA exists to park cars. You can imagine LA would change if that changed. ... [And if] you live within a kilometer of a freeway, your chances of dying of lung cancer are 66 percent higher...

If we densify car transit...which means that we have more than one passenger in the car, that densification pulls cars off the road. If we can densify and then electrify, we get rid of emissions, and then if we move to micro-mobility [like bike and scooter usage in cities], we remove...anywhere between 10 to 40 percent of [car] rides in the city. ... The mission is to get cars off the road [and] get emissions down so people don't have to die of cancer. ⬡

Jon McNeill

Our Atlanta roundtable was hosted by Southern Company.

Cal Austin, Director of Pfizer Innovation.

Dennis McGrath of Plated and David Rose of Warby Parker.

Roundtables:
Chicago, Atlanta & NY
SEPTEMBER 2018, DECEMBER 2018 & MARCH 2019

Our roundtables are each designed to explore a topic, from dialing up the value innovation teams can deliver (Chicago), to executing on ideas (Atlanta), to achieving organizational agility (New York). Thanks to our sponsors at KPMG, Spigit, and PA Consulting for helping us convene these conversations.

Debbie Roever of Walgreens Boots Alliance.

Hsiu Mei Wong, Partner at PA Consulting, discusses what it takes to achieve true "organizational agility."

Daniel Kufer, Director of Strategy at ThyssenKrupp North America.

Paul

Irv Latta, Director of Digital Enablement at Symetra.

Virginia Williams, VP at Spigit, and Jamie Williams, VP of Enterprise Delivery at Premera Blue Cross.

Peter Berger of EmbraerX with Damineh Mycroft of Boeing HorizonX.

Shashi Jain, Innovation Manager at Intel.

Roundtables:
Seattle & San Mateo
OCTOBER 2018 & FEBRUARY 2019

Spigit co-hosted a fall roundtable at Starbucks HQ in Seattle, and PA Consulting a conversation at EmbraerX. To learn about upcoming roundtables, visit innovationleader.com/events.

Participants split up into breakout groups.

Scott Kirsner of Innovation Leader highlights discussion topics.

Sri Mudigere, SVP of Global Product Management at Wells Fargo.

Justin Graham, Chief Innovation Officer at Hearst Health.

'That Will Never Work'

7 GREAT ANTI-INNOVATION QUOTES BY DAN WHEELER

Many of history's most respected intellectuals—not just the senior leadership at your company—have said some of the silliest things about new ideas that had not yet realized their potential. These are a few of my favorite "anti-innovation" quotes.

1

"There is not the slightest indication that nuclear energy will ever be obtainable. That would mean that the atom would have to be shattered at will."

ALBERT EINSTEIN
(1932)

2

"Television won't last, because people will soon get tired of staring at a plywood box every night."

DARRYL ZANUCK
20TH CENTURY FOX (1946)

3

"We don't like their sound, and guitar music is on the way out."

DECCA RECORDING COMPANY, ON DECLINING TO SIGN THE BEATLES (1962)

4

"There's just not that many videos I want to watch."

STEVE CHEN, CO-FOUNDER OF YOUTUBE, UPON SELLING HIS OWN COMPANY TO GOOGLE (2005)

5

"A rocket will never be able to leave the Earth's atmosphere."

NEW YORK TIMES (1936)

(The *Times* famously published a correction to this statement in 1969, as Apollo 11 traveled to the moon.)

6

"The Americans may need the telephone, but we do not. We have plenty of messenger boys."

WILLIAM PREECE
BRITISH POST OFFICE (1876)

7

"These Google guys want to be billionaires and rock stars, and go to conferences, and all that. Let's see if they still want to run the business in two to three years."

BILL GATES
CHAIRMAN OF MICROSOFT (2003)

Ummm.

DAN WHEELER IS A MEMBER OF IL'S EDITORIAL ADVISORY BOARD AND THE FORMER HEAD OF GLOBAL INNOVATION AT DUNKIN' BRANDS

IMPACT
2019

350 ATTENDEES   **2+ DAYS**   **65+ SESSIONS**

Impact is Innovation Leader's annual corporate innovation conference that helps senior strategy, R&D, and innovation professionals learn to deliver value and real business impact inside their companies.

At Impact 2019, senior innovation executives from today's most successful companies including Comcast NBCUniversal, Bose, Clorox, Nationwide, Embraer and more will share their insights and lessons-learned.

Join us on October 22-24, 2019 in San Francisco for interactive whiteboard sessions and workshops, peer-to-peer learning, skill-building, interactive activities, concrete take-aways, and access to a highly-curated network of innovation professionals willing to share best practices and lessons learned the hard way.

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Skill-Building and Leadership Workshops

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Register at impact.innovationleader.com

How Long Do Corporate Innovation Jobs Last — and What Happens Next?

By Scott Kirsner

How long do people typically last in a corporate innovation role? What do they do next? And what is most likely to trigger a job change?

We wanted to learn more about innovation tenure and career paths, so we analyzed 152 LinkedIn profiles of people who've held innovation-related roles in the past, from innovation managers to Global Heads of Innovation to Chief Innovation Officers. Our sample included a wide range of industries, but was composed predominantly of US-based professionals (93 percent; the remaining 7 percent were professionals based in Europe and Australia). To understand why people in innovation-related roles changed jobs, we fielded a separate survey in January 2019 which received 132 qualified responses.

The average tenure in our LinkedIn sample was just under four-and-a-half years (4.4, to be exact). We found that VPs of Innovation tended to have the longest tenures (5.4 years), and Innovation Managers the shortest (3.3 years).

We also looked at the most common "next steps" after someone wrapped up a stint in corporate innovation. By far the most common next step was a move into consulting (27 percent of our sample), followed by entrepreneurship (13 percent).

What closes the book on an innovation role? Nearly 70 percent of survey respondents said they left voluntarily, but 15.4 percent said the move was not voluntary, and 7.7 left because an entire innovation or R&D initiative was shut down.

Average Tenure by Title

CINO/SVP
Years 0 ——●4.2——— 6

Vice President
Years 0 ————●5.4— 6

Director
Years 0 ———●4.4—— 6

Innovation Leader
Years 0 ———●4.4—— 6

Manager
Years 0 ——●3.3———— 6

For the complete research, visit InnovationLeader.com and search "tenure."

What People Do After an Innovation Role

Consulting	27%
Entrepreneurship	13%
Different role at different company, different industry	9%
Similar innovation role at different company, same industry	7%
More senior role at different company, different industry	7%
Similar innovation role at different company, different industry	7%
Other (retirement, academia, and other role changes)	30%
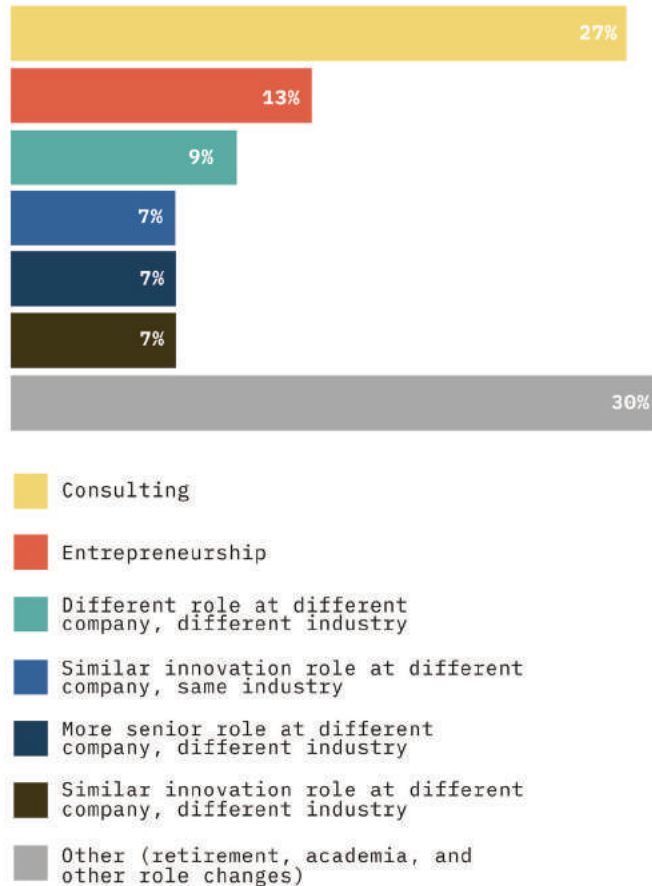
"Transformational corporate innovation is difficult, and the constant battle to change hearts and minds and fight off the antibodies to achieve the success takes a toll on the people driving that work. The consulting path can offer a respite from battling the matrix while providing the corporate innovation practitioner the opportunity to continue the interesting innovation work to which they are drawn. That has certainly been true in my case. After close to 20 years...I had gained more than a few grey hairs (and the net count was down too)!"

RICK WALDRON, FORMER INNOVATION AND
NEW INITIATIVES EXECUTIVE AT NIKE AND INTEL

IMPACT:
Our Annual Member Gathering

OCTOBER 2018

Innovation Leader brought together 350 strategy, innovation, and R&D executives from around the world in Boston for Impact 2018. We learned to row on the Charles River; met with startups at the Harvard Innovation Lab; visited MIT's Engine incubator for startups focused on "tough tech"; handed out Impact Awards to winners including Medtronic, Citi Ventures, and USAA, and participated in a case study discussion at Harvard Business School. The 2019 event happens in San Francisco. Details at impact.innovation-leader.com.

MIT's Fiona Murray with Faisal Masud, COO of Wing Aviation.

Amit Bhatia of Manulife/John Hancock.

Participants took a crash course in competitive rowing on the Charles River.

Impact Award winners at the awards reception.

Christopher Chapman of Weoverme leads a workshop on culture shifts.

Tamsen Webster of Find the Red Thread leads a session on storytelling.

Dunkin' Brands showed up with a printer that could lay down customized images on the foam atop a cold brew.

SURE, YOU SHOULD ACT LIKE A STARTUP. BUT CAN YOU?

**BY KATHERINE
LONDERGAN**
IDEO Cambridge

**BY DAVID
SCHONTHAL**
IDEO Chicago

AS TECH VALUATIONS rise, and more and more unicorns are born, legacy businesses everywhere hear the message that they need to act more like startups. If you want to innovate, stay relevant, and grow, the advice goes, then you have to take risks, be nimble, and throw money at potential solutions.

But the painful reality is that most corporations don't enjoy the conditions necessary to enable true startup behaviors. The DNA of a large, established business looks far different than that of a fledgling company. And just like with actual startups, creating new ventures is hard, risky, and doesn't always pan out. So how, exactly, can you design the conditions for success?

If you have a big company's DNA, you need to catalyze strategic changes—small mutations that make it possible for a startup model and mindset to thrive inside a much different species. Sometimes, it happens naturally. If a legacy company hits an acute adapt-or-die moment, there's no choice but to change (à la Netflix or Microsoft). But for companies where transformation is inevitable but not immediate, it's entirely possible to engineer the conditions that generate pressure for a controlled shift. Here are three ways senior management can provoke the conditions for success.

Question Your Business Model

Many legacy companies have been successful because they've focused on their core business, while many startups have flourished by routinely abandoning theirs. The key is to do both: Keep the core business running while a new venture pursues something entirely different.

Recently, American Family Insurance was looking to innovate outside of its traditional business model while staying true to its mission to help working families. One of its customers' biggest pain points was an inability to save enough money for an emergency. A $400 surplus—a cushion to get through a medical crisis, for example—was beyond many people's reach.

Initially, American Family thought budgeting tools might provide a solution, but from the very first research interview, it was clear that budgeting wasn't the barrier—cash-strapped people budget masterfully. The problem was having enough income to put away a little extra.

So the insurance company embraced a radically new opportunity, creating a service to help families living on the edge bridge the gap between their paychecks and their security threshold. The company built a new business venture called Moonrise—a platform that would allow businesses to tap into an on-demand workforce, and allow people to access short-term work when they found themselves on shaky financial ground.

The solution was outside the scope of the legacy company's core offering, but by moving outside of its business model, American Family Insurance was able to create an entirely new venture that helped its core customers solve a chronic, unaddressed problem.

Be an Early Adapter

It's nearly impossible for an entire corporate organism to pivot rapidly in response to what's happening

around it, but startups have the innate superpower to move fast and get in early. When an emerging need or trend appears on the horizon, they can leap to create new products—or even new markets—far more quickly than large corporations. To achieve speed and adaptability, the new venture must be carved off and treated as its own autonomous, responsive entity.

Take the case of the 150-year-old financial company that decided to widen the scope of its business to meet the growing desire for socially-responsible investment options. The company recognized early signals that the consumer desire for Environmental, Social and Governance (ESG) investing and impact investing was increasing rapidly, especially among younger generations, with whom they didn't have many relationships. Chasing a high-growth opportunity for a new market segment, they set out to create a digital-first product that focused on socially-responsible investing.

To get started, the company didn't simply announce a new division, or task an existing team with creating something new. Instead, they hired a founder and an outside startup team of 10. They built a company and a culture that was totally separate from their parent company's offering, allowing the venture to take risks, prototype early and often, and above all, move fast. Throughout the venture's development, the team continuously evolved the experience and business model by pushing prototypes to potential customers, adapting and pivoting until they reached product-market fit. By creating a team with the impetus and the culture to hit the ground running, the venture launched in just 18 months—and put its product in the hands of its consumers before its competitors did.

Select for Resilience and Relentlessness

No matter the industry, startup leaders tend to have a few shared qualities

that are more common among the entrepreneurial set than among seasoned CEOs. For a new venture to really work, the people behind it need to be driven by curiosity and insight, and have the skills necessary to prototype and iterate their way toward a tangible outcome. They can't carry the static burden of "the way we do things around here."

Intercorp, a massive Peruvian economic group of more than 30 companies, including banks, malls, cinemas, and schools, sought to build an innovation studio. Instead of solely relying on the business units to drive their own innovation processes, the company opted to create a central en-

creating urgency and applying positive pressure to disrupt its own businesses and remain competitive.

As a leader of an established company, you can't ignore its history or DNA—nor would you want to; it's what made the company successful in the first place. But you can constructively provoke necessary changes that allow new ventures to flourish. By openly embracing new business models, pursuing (and possibly creating) new markets, attracting and empowering entrepreneurially-minded talent, and even imposing a few artificial constraints like tight timeframes or lean budgets, companies can begin to fundamentally evolve not only what

> "True venture-building, much like innovation itself, cannot be a corporate hobby. It cannot be wedged into spare time and pursued only when employees have white space on their calendars."

tity that could solve problems across its offerings, focusing on the needs of Peru's rising middle class.

Intercorp purposely built La Victoria Lab in a middle-class Peruvian neighborhood—outside the walls of the corporate HQ—to immerse the team in the human-centered problems it's trying to solve. The company also put together an interdisciplinary team of resilient and relentless talent, and set it up to embrace design thinking, identify new opportunities, and constantly prototype new value propositions. This talent stays close to the customer in order to shape new ventures in development, works through rapid digital-first prototyping, and operates within constrained timelines to get results. To drive disruptive new growth opportunities, small, cross-functional teams work quickly to design and launch digital businesses that compete with Intercorp's core companies. Through La Victoria Lab, Intercorp's leadership is intentionally

they do, but also how they do it. It's the only way to ensure long-term market leadership—and sometimes even survival.

The tricky part of all of this is that true venture-building, much like innovation itself, cannot be a corporate hobby. It cannot be wedged into spare time and pursued only when employees have white space on their calendars. It has to be modeled from the top, by senior leadership. One of the things that makes startup entrepreneurs effective, and ultimately successful, is their grit, determination, and dedication to creating lasting change in the face of all obstacles. It's why others join them on their mission. Make it one of the reasons that others join you.

Katherine Londergan is Senior Design Director of Business Design at IDEO Cambridge. David Schonthal is Senior Portfolio Director of Business Design at IDEO Chicago.

Peer Perspectives

"Communication is probably the most important sibling to innovation. If people don't know about [what you're doing], they can't engage and participate…"

David Wilson, Bechtel

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How a Global Network of Innovators Altered the Culture at Pfizer

By Daniel Seewald

CONTRIBUTING COLUMNIST
Former Senior Director of Worldwide
Innovation at Pfizer

Pfizer was at a pivotal juncture in 2013. The company was facing an uphill struggle to revive the organization. Several patent-protected brands—Viagra and Lipitor most notably—were approaching patent expiration, and the company was facing uncertain times. Investors were skittish and employees were increasingly anxious. The CEO, Ian Read, recognized that Pfizer had to signal to both its employees and investors alike that innovation would transcend merely having a pipeline of innovative products; it also would need to create a pipeline of innovative people.

But building an innovation culture is easier said than done. And companies often see their culture programs launch and then quickly vanish.

From the outset, my team faced the question of how to make an innovation culture last. The traditionalists argued that a top-down program would have the force of urgency and compliance. But they also acknowledged that leader-mandated programs can feel forced and sometimes lack broad buy-in. Alternatively, the corporate insurgents advocated for a grassroots approach. Employee-driven, grassroots movements can bring a genuine, scrappy, and enervating feeling to the company. But grassroots movements can fizzle or end up adrift. And of course there were those who believed we could have the best of both worlds by creating a Potemkin-like grassroots movement while controlling the outcome. That can work—until the truth is discovered.

Given the options, we felt we had to create a new way. To find inspiration, we eschewed traditional corporate change management examples that many of the consultancies had taken off the shelf. Instead, we looked at various disciplines including high-performance sports teams, political networks, and education. One model was the Montessori Method, which emphasizes guided choice, encouraging freedom within limits, and building a reliance on networks of experienced peers to help reinforce learned concepts. Borrowing from the Montessori principles, we set out on a multi-year journey to construct a distributed network of experienced peers—our innovation champions.

The champions spanned all geographic regions and represented the various divisions in the corporation. And although the champions operated with considerable autonomy, the network did not function in isolation. Because "multiple sources of exposure to an innovation are required before an individual adopts the change of behavior," to quote the academic researchers Damon Centola and Michael Macy, my headquarters-based team complemented their efforts by pulsing periodic, integrated marketing campaigns and cultural initiatives to help spread the "cultural contagion."

The role of the champion centered on three objectives:
1. to evangelize the innovation culture, which became known as the "Dare to Try" culture,
2. to apply innovation practices and behaviors to local teams, and
3. to mentor the members of the network.

The champions operated within local geographic clusters, and each network cluster formed, over time, its own internal identity (e.g. "The Dare to Try Pioneers"), unique communication channels, and localized strategic plans to advance the Dare to Try culture. These networks proved to be an effective means of reaching employees in an authentic way. With only 600 champions in the network, we estimated that these champions were able to reach a majority of Pfizer's 90,000 employees on multiple occasions.

EXPERIMENTS WITH RECRUITING CHAMPIONS

The networks were highly self-directed, but not a traditional grassroots initiative. The guiding hand from our headquarters-based team focused on accelerating the influence of these distributed networks. The two areas of intervention were network formation and network retention. From a network formation perspective, our team tested a few methods of recruiting champions. The initial approach was to use a leader nomination process to recruit "high potential" colleagues. But by the end of year one, the attrition rate was relatively high, and research pointed to a combination of "change fatigue" and poor fit for the role.

To solve the attrition problem with our early champions, we decided to conduct a series of experiments. Borrowing from the worlds of behavioral science and clinical research, we designed test and control groups. In our first experiment, the control group was made up of nominees from internal leadership teams, and our test group included colleagues who self-nominated after being exposed to a promotional campaign that included a description of the champion role and expectations. More than a year later, we discovered that the retention rate had increased with the test group, but the level of ability (measured through internally validated performance scores) slightly declined. So this was only a partial success.

This led us to a second round of experiments. In our second round, we wanted to learn if we could both increase retention rates *and* performance scores for champions. We used self-nominations as the control group this time and compared them to a test group of champions that were identified through a predictive method. Specifically, we surveyed approximately 100 of our highest-rated champions and had them predict future champions based on their own experience and the profile of a "great champion." The results this time were astonishing. The next several cohorts of predicted champions scored extremely high in terms of performance scores. But more importantly, one year later, the retention rate was the highest for the predicted champions as compared to the self-nominations as well as leader nominations.

As our recruiting methods evolved, so did our methods for retaining champions. The approach to retaining champions in the network was a mixture of direct and supportive actions that enabled the champion networks to be self-sustaining. To accelerate the engagement of the champion networks, our headquarters-based team developed several supportive programs and tools, without meddling too much in the day-to-day activities of our champions. Our primary goal was to inform, inspire, and engage the champions. To that end, we introduced a periodic "talk show" format in which we would conduct fast-paced interviews, use game mechanics to share stories, and broadcast on-location with new guests every time. And although we still provided ongoing training and upskilling events, and ran a global rewards pro-

"Innovation would transcend merely having a pipeline of innovative products; it also would need to create a pipeline of innovative people."

> **"The shift in culture enabled a couple of employees to spin out a novel healthcare startup, known as Springworks Therapeutics."**

gram, a disproportionate amount of the coaching, collaboration, and recognition was driven by the local networks. By enabling the local networks to customize things for own their individual ecosystems, there was greater authenticity, and there was local ownership of innovation.

'EVEN DECENTRALIZED MOVEMENTS REQUIRE ADVOCACY'

Although the Dare to Try program was endorsed by the executive leadership team, it eventually became a decentralized movement. That said, even decentralized movements require advocacy. In the early days, advocacy was built by showing—not telling—people about the benefits of innovation. In order to create that immersive experience for many of the senior leaders, we ran mini-sprint sessions that were 60 to 90 minutes in length and combined a mixture of inspiration and hands-on application. These fast-paced, high-involvement sessions won over many senior leaders who were initially ambivalent about "yet another corporate program." And we were able to enroll these leaders as supporters to help clear the way of major obstacles for running workshops and scaling the network of Dare to Try Champions. As the program progressed, we began to see several senior leaders request to be trained as champions themselves, so they too could practice and model the capabilities within their teams.

Three years post-launch, the impact of Dare to Try came into focus. Traditional performance metrics were tracked alongside attitudinal and cultural measures. Performance data showed a steady increase in both the number of innovation sessions and, more importantly, outputs that tied into a team's strategic plans and ultimately increased revenue and cost savings. An attitudinal shift showed up in the data as well. An ongoing innovation index survey we conducted reflected a cultural transformation, with marked increases on both organizational ability to innovate as well as individual ability to act in more innovative ways. The customer-designed survey explored leadership, behaviors, environment, and impact. And it provided a basis for comparison across business units and also time. This became an important tool to discuss with senior leaders how their department's performance on innovation metrics was progressing (or not) over time, and in comparison with their leadership peers.

THE ORGANIZATIONAL IMPACT

Perhaps most telling were the unquantifiable fingerprints left all around the organization. Thank you notes regularly were sent to champions in the informal networks. Employees proudly emblazoned Dare to Try stickers on laptops and office doors. People were acting more entrepreneurially, and in one case, the shift in culture enabled a couple of employees to spin out a novel healthcare startup, known as Springworks Therapeutics. Even leaders routinely inserted "Daring to Try" as a new action verb in their communications, including in the Pfizer annual report.

After six years, the program has evolved into an iconic brand and a movement at the company. But all movements inevitably face an existential question: "Can you continue to thrive in a decentralized system?" With leadership changes and new enterprise-wide initiatives competing for attention, the question remains as to whether Dare to Try will continue to exist through a completely decentralized structure, or if it will require continued centralized support. After more than five years of leading this experiment, I am participating in the last phase. As I leave Pfizer to become the founder of an innovation consulting firm (The Deliberate Innovator), the Dare to Try movement will face its most important test. Can Dare to Try remain a thriving culture, network, and capability as a truly decentralized initiative? Time will tell.

Culture change in any organization is not easy. It takes time. It takes vision. It requires clear and measurable goals to track your progress.

Because culture is fundamentally about human beings, we need to expect variability. What works with one team may not work with another. Therefore, if you want to create lasting innovation in your organization, you need both a deliberate approach to change, as well as a willingness to adapt your approach when necessary. By cultivating networks that are simultaneously directed, yet informal, you can harness the collective enthusiasm of your employees while delivering tangible results—and a notably different culture—in a global organization. ●

Building for the Future: How Construction Giant Bechtel is Investing in Innovation

By Scott Kirsner

EDITOR

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When you need to get an airport, bridge, light rail system, or Chunnel built, Virginia-based Bechtel is often the company that gets the call.

The company traces its roots back to the late 19th century, when farmer Warren A. Bechtel got into the railroad-building business. A few years later, he was one of the early adopters of the most advanced construction equipment of the era: the steam shovel. In the 1930s, Bechtel organized the consortium of companies that built the Hoover Dam in Nevada.

These days, Bechtel is the biggest construction company in the US, with about 55,000 employees and $33 billion in revenue. But the company is facing more intense competition, in part from Chinese rivals, and it acknowledges that it must get better at testing out new software and tools.

Leading the innovation charge at Bechtel is David J. Wilson, who has worked at the company since 2001, and took on the role of Chief Innovation Officer in 2016. We spoke to him in January. Edited highlights from the conversation are below.

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INNOVATION IN CONSTRUCTION

Construction has not been a hotbed of innovation. We've been lagging [behind] most every other industry in driving technology and R&D, because our product is not a widget. It's not a pharmaceutical. It's a build or a project like an airport or a power plant. The life cycle is much longer than some other kinds of projects, and the need to drive technology or R&D or innovation isn't as obvious, but it's just as important.

In terms of how long it takes from proposal to early design to build into operation, it's not uncommon for it to be three to five years or more. So if you were to ask, "How do I start to measure R&D, and innovation, and adoption within that kind of project," it can be hard to connect [and say,] "Well, we did this five years ago, and here's the benefit… so the next job needs to incorporate these aspects."

For the construction industry, in the last 30-plus years, it has ignored innovation aside from the desktop computer. Now, it's becoming more of a necessity to find ways to improve construction productivity—for us to get the right resources in the right place at the right time, and make better decisions around what to install, what to buy, how to use
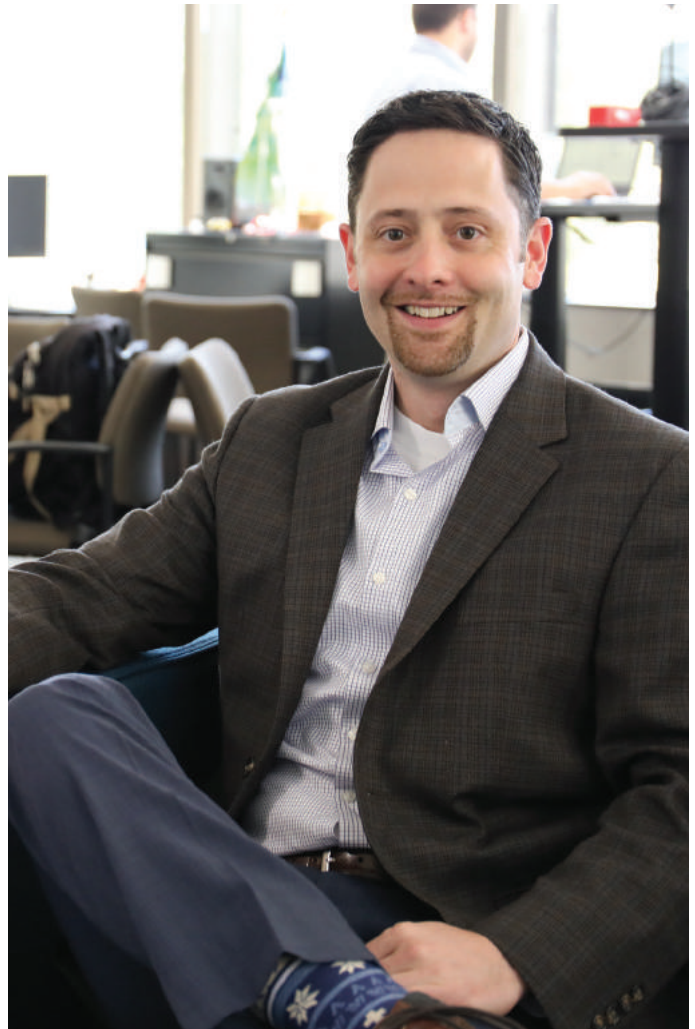
the time. Technology can do a lot to help us improve productivity and the industry's performance.

But because we're a risk-averse industry, there hasn't been a lot of appetite to go do new things.

That has historically been the challenge, which we're slowly overcoming. Our approach has been, "Let's make innovation less risky, and demonstrate real, mature deployments." Innovation shouldn't be seen as this abstract, obscure thing. It needs to be relevant to that three-to-five year project lifecycle.

CREATION OF 'THE FUTURE FUND'

Back in 2015, the organization recognized that construction productivity had lagged, in part because we weren't adopting technology. Innovation doesn't transfer from job to job. So the partnership [that manages Bechtel] said, "Unless we do something deliberately, [nothing is] going to happen."

So they set aside the "Future Fund" to provide dollars to take things from concept to prototype to early pilot. The idea was to take that off the project's spend.

A page from a comic book that Bechtel's David Wilson had produced as a way to illustrate future scenarios for the engineering and construction industry.

It was a three-year, $60 million fund at first. The first three years were 2016, 2017, and 2018. We're now into an annual funding model; every year, we're re-funded. That's because the first three-year period proved valuable and successful.

In the first three years, we admitted that we didn't know what this would look like. We knew we were not doing enough innovation. So I went and interviewed stakeholders. [Their opinions] went from incremental, deployable innovation to moonshots. Some said, "If it's not a unicorn-like idea, we shouldn't do it," all the way to, "if it's not deployable, I shouldn't do it." So we took a portfolio approach—ranging from "roof shots" to "moon shots."

In the first three years...[the company] hadn't adopted a full digital toolkit, so we felt that there was lots of room for new planning applications, resourcing applications, improved design approaches. So [about] 70 percent of our work focused on digital and software.

We have narrowed the focus [for] the next couple of years. Now that we've got the foundational pieces in [place, the plan is to] focus on physical innovation—materials, processes, pipe, and steel—to close some more gaps.

If you look at the tooling in the industry, it hasn't changed substantially. The heavy equipment we use has been enhanced, and it's certainly smarter today than it was a few years ago. But the basics of concrete and rebar and cranes—not a lot has changed. You look at car manufacturing today versus 30 years ago, and it's pretty different. So we're exploring [these questions:] Are we ready for robotic assistance to help in the field... with repetitive activities? What about additive manufacturing to help with concrete? Autonomous delivery of supplies? We're trying to go through those explorations, so we can change some of these key physical activities that happen thousands of times [during our projects].

TWO IDEAS WE'VE WORKED ON

One project is the computer in a job box, which we call BaseCamp. Literally, somebody took a computer and put it in a job box. So we iterated on that. ... It was focused on keeping the craft [workers] close to the workplace to drive productivity. It reduces their miles walked each day. It didn't change how they worked, but it changed where they worked. That has shifted to, "What if we had it on a tablet or a smartphone?" So it is starting to change how we work.

Another one, Live-StrOM, involves shipping. ...When we ship large modules up a river, sometimes they are so large that it blocks the captain's view of the river. They can't see what's ahead, when they're going to dock. [You often] need a second boat, or someone to communicate up to the captain. That has a significant cost. So one of our traffic and logistics experts said, "What if we put a camera on a magnetic platform that locks to the front of the boat?" He wasn't an engineer, but he went out and prototyped it with engineering and third parties. [The system] has an infrared and video camera, and it provides a live feed to the captain. It's a patented and licensable product that we're looking at scaling.

METRICS HAVE CHANGED

Each phase of the program has had different metrics.

In the first year, we focused on awareness and engagement—people getting involved, submitting ideas, idea counts, idea comment count.

In year two, we focused on how quickly we were moving ideas from concept to pilot—what's the cycle time and throughput?

In year three, it was how many mature innovations are on projects. It was traction and adoption metrics. We had about 40 or so by the second year of the program. Last year, it was up to about 150. In 2019, we are trying to get up to 500. And those deployments will result in schedule and cost benefits to the company. An idea shouldn't make it to scale or to multiple job deployments if it isn't demonstrating impact.

THE IMPORTANCE OF COMMUNICATION

Communication is probably the most important sibling to innovation. If people don't know about [what you're doing], they can't engage and participate, and if they can't do that, they won't be stakeholders in the adoption. The more awareness you can build, the better off you'll be.

It takes a lot of repetition in a lot of different formats. ... But the more you invest in communication, the less resistance you face.

We put together a comic book early on [to give] people a vision of where we're going to go. It was focused on a day in the life of a site supervisor in 2020, if they'd been teleported from 2016. We do videos, we do podcasts, we do emails, we have done a hardcover book. We have a magazine that goes out internally to spotlight innovation and

> **"Communication is probably the most important sibling to innovation. If people don't know about [what you're doing], they can't engage and participate, and if they can't do that, they won't be stakeholders in the adoption."**

talk about where things haven't worked. We've spent more energy on communications than other initiatives, because of the need to get people involved and show progress. And also because the immediate monetary or schedule impact was not going to be there right away. We knew we needed to start messaging to set expectations, so it wasn't an ROI conversation from day one.

WHAT I'D DO DIFFERENTLY

There are always things you don't appreciate early on, things that I'd do differently. One is finding ways to appropriately engage stakeholders. [You want their involvement] so that when the time comes, they're aware and ready to dive in, but [you also don't want them to] try to take control or stifle something because it's different. Sometimes we try to adopt and deploy too quickly, or somebody gets excited but doesn't understand [the initiative], and tries to replicate it, but they may end up killing it and bogging it down.

The other part we could've done better is that... maybe we didn't right-size expectations around how hard it is for ideas to mature and get developed, and how much inertia there is in every organization. We may have been able to communicate that better to help [idea] originators not get discouraged.

TEAM SIZE AND STRUCTURE

We've got 10 people in my core group, but the extended team quickly gets to 100. Not every idea comes into headquarters to be developed here. Some may be incubated locally, and some at the corporate level.

Our CEO Brendan Bechtel has been key in driving this, and my boss, the corporate manager of functions, Mary McLaughlin, has been supportive. If you don't have senior buy-in and funding, innovation is probably just a buzzword. ◆

Citi Ventures Leader: Not All Transformations are Digital

By Beth Devin

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As software continues to "eat the world" and large organizations work to keep pace with technological change, there can be a tendency to assume that all transformations are now digital transformations.

But that is not entirely true. While leveraging technology can help companies improve and modernize their processes, products, and services, true transformation is often predicated on deeper shifts in the organization. In fact, the most successful digital transformations often arise organically from a new vision or company culture, rather than vice versa.

I've compiled below several examples of major organizations that are regaining their momentum in hyper-competitive markets by rethinking their core focus, strategy, and structure in order to enable enterprise-wide transformation.

COMPANIES THAT MADE THE LEAP

1. In the early 2000s, **Microsoft's** shares were languishing around $20-30. The company seemed stuck in the past and struggled to compete with other tech giants, such as Apple and Google. In 2015, Microsoft took a huge step and reoriented its strategy. It shifted from concentrating primarily on high margins to focusing on growth. Under the leadership of CEO Satya Nadella, Microsoft rediscovered its roots as a fierce competitor and transformed itself into a growth company, with the capabilities and attitudes necessary to compete in modern markets.

Nadella shifted the company from what he dubbed "a 'know-it-all culture' to a 'learn-it-all culture.'" Learn-it-all cultures, he explains, will win every time. Nadella also deprioritized Windows, and refocused Microsoft's leadership and business strategy on cloud services, artificial intelligence, and gaming. Microsoft has also acquired 49 companies since 2014, including LinkedIn and the software development platform GitHub. Today, Microsoft trades at over $100 per share.

2. As one of the first successful automobile manufacturers, it would have been easy for **Ford Motor Company** to stay within its comfort zone. After nearly filing for bankruptcy in 2009, how-

ever, Ford realized that it needed to rethink its approach.

In 2017, Ford brought on Jim Hackett, formerly CEO of the furniture-maker Steelcase, as its new leader. Hackett has implemented design thinking principles across the company to ensure that Ford is truly delighting its customers, and is now spearheading an $11 billion, multi-year corporate restructuring that will transform it from a 20th century automaker into a 21st century transportation services provider.

As ride-sharing and autonomous vehicles point the way toward Mobility-as-a-Service (MaaS)—an industry which is expected to grow to $1.75 trillion in 2028—Ford is cutting product lines and working to develop an ecosystem of mobility solutions and providers. While that effort has had its fits and starts, Ford is on the path to reshaping itself, once again emerging as a global transportation leader.

3. Procter & Gamble was founded in 1837, but its longevity offers scant protection against intense competition in the globalized market for consumer goods. In 2014, P&G began to streamline and simplify the company, reducing its brand portfolio from 170 to 65, and building out its e-commerce business with companies such as Amazon, Alibaba, and Tencent. P&G also dismantled its matrix organization and replaced it with a simpler structure, resulting in speedier decision-making and greater end-to-end accountability.

The results of P&G's transformation are consistently better top-line and bottom-line numbers, including dramatically improved core operating margins. Its stock price has climbed steadily, reaching historic highs in 2018.

4. Walmart recently partnered with Microsoft and Google to provide shoppers with the kinds of convenient digital experiences they've come to expect from e-commerce retailers such as Amazon and Alibaba.

At a June 2018 shareholder meeting, CEO Doug McMillon described Walmart as a "technology company." Unquestionably, Walmart has seen the writing on the wall and is repositioning itself as customer-focused and digitally adept. Walmart's use of Microsoft Azure for cloud services and Google Home for voice-activated shopping demonstrates its commitment to catching up with its tech-savvy competitors.

Walmart also invested heavily in acquiring reputable firms with proven e-commerce platforms, such as Jet.com (a Citi Ventures portfolio company), Bonobos, and Flipkart, India's largest online store. Walmart's transformation isn't just about enhanced digital customer experiences—it's also about increasing the company's scale, reach, and scope of services. Clearly, Walmart intends to remain competitive and is investing in the resources it needs to maintain its role as the world's leading retailer.

5. For years, **SAP** has been a leading provider of software and expertise for industrial-strength business transformations. Now, the firm is transforming itself to become leaner and less complicated, making its formidable suite of products and services easier to understand and less cumbersome to deploy. SAP's transformation is driven by business logic and by the changing nature of the software industry. The open-source revolution has forced companies like SAP to re-evaluate their reliance on proprietary enterprise software, and to offer products that can be mastered by typical business users. Essentially, SAP is in the process of transforming itself from a company that sells software into a company that provides business results. In that regard, SAP is following the larger global trend of focusing less on product capabilities and more on experiences—and outcomes—the customer wants.

KEY TRANSFORMATION DRIVERS

The examples above demonstrate that successful corporate transformations, while often enabled by technology, rarely succeed solely due to technology. Rather, these shifts often center on one or more of the following drivers:

▶ **People.** To develop and execute full-scale transformation, an organization must have the right talent, skill, and experience in place. Encouraging your people to adopt and continually reinforce a growth mindset can empower them to take chances and invest in developing new capabilities. The tone from the top and the echo

"The most successful digital transformations often arise organically from a new vision or company culture."

from the bottom are both important indicators to monitor.

▶ **Focus.** As industries evolve into ecosystems, companies have the opportunity to reconsider their ultimate aim, purpose, and approach. Some of the most fascinating transitions involve shifting a company's strategic focus from selling products to providing optimal customer experiences and services.

▶ **Fortitude.** Strategic change is a complex and resource-intensive process. Retooling the organization, processes, and reward systems can help companies maintain the patience and discipline required to push through blockers as well as celebrate wins along the way.

▶ **Horizon.** Organizational renovations are not "one-off" projects. They are multi-year ventures with deep and far-reaching consequences for stakeholders at every level of the enterprise. Fixating on short-term results can erode long-term efforts, which often require months or years of testing, refinement, and optimization.

▶ **Openness.** Successful transformations require high levels of self-analysis and candor. Bringing transparency to your leadership team can help sustain an enterprise-wide transformation strategy.

IN CONCLUSION…

Ford's CFO, Bob Shanks, is straightforward when he talks about the company's ongoing restructuring: "This type of profound redesign will take time," he said last year.

But that is true of all corporate transformations: There are no overnight successes, and there will likely be moments of failure and despair. Successful organizations will be those that keep their client at the center of every decision they make, and find the strength to persevere in the face of obstacles and thrive in our dynamic economy. ⬡

"There are no overnight successes, and there will likely be moments of failure and despair."

Finding New Ways to Bring Stories to Life at Lucasfilm

By Kaitlin Milliken
STAFF WRITER

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For movie fans, being able to walk shoulder-to-shoulder with their favorite Star Wars characters seems like a dream. But Lucasfilm's ILMxLAB uses virtual reality technology, augmented reality, and other emerging technologies to make that fantasy a reality.

Innovation Leader heard from Vicki Dobbs Beck, the Executive-in-Charge at ILMxLAB, our annual Impact conference last October. During her keynote presentation, she discussed how her team designs experiences that are helping the entertainment industry evolve from "storytelling to storyliving."

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BUILDING IMMERSIVE EXPERIENCES

A few years ago, we began asking ourselves what was next. … Around that same time, disruptive technologies were being announced. We recognized these as new platforms of expression. The devices would allow us to convey emotions and establish deep and intimate connections to story and place. … We launched ILMxLab a little over three years ago. We wanted to be pioneers, and our goal was to be able to have people literally step inside our stories.

Let's talk about why immersive storytelling is unique from other storytelling mediums. For virtual reality, in particular, it's really two things. First is this idea of the power of being there, which is really about world-building and place-making. And secondly,

it's the power of connection. Immersion provides a unique opportunity to interact with characters. If they respond to you in a compelling and meaningful way, it opens up entirely new possibilities.

Our emphasis to date has been on location-based entertainment. ... ["Star Wars: Secrets of the Empire"] is a location-based experience that you do with your family and friends, in groups of four. In approaching this experience, we acknowledged that it was something different. It was not a film, not a game, and not a theme park attraction—but we could learn from all of these.

What is special about [this kind of] hyper reality [experience]? First, it's the marriage of the physical world and the virtual world. Where you see a wall in the virtual world, if you were to reach out and touch, there would actually be a wall there. And that one-to-one mapping causes your brain to almost immediately buy into the reality of where you are.

Next, we invoke all of the senses—we have transducers in the floor that are driven by audio created by Skywalker Sound, and it makes the floors rumble. It really feels as if you're moving on a [floating platform]. And then we have fans, heaters, and scent generators that further enhance the world. ... All of this combines to deliver on the idea of the power of being there.

The power of connection comes not only from interacting with virtual characters, but also through the experience that you have with your family and friends.

STORY MATTERS

Story matters. It's a story that propels the action, story that triggers emotion, and story that gives us that sense of fulfillment. And... it is possible to move from storytelling to storyliving. ... As we continue to pioneer and innovate, celebrating the opportunities and confronting the inherent challenges of doing something new, we must remember the words of Master Yoda: "Do, or do not. There is no try." ●

"It's a story that propels the action, story that triggers emotion, and story that gives us that sense of fulfillment."

CAN CORPORATE INNOVATORS LEARN TO DANCE?

THE BIG QUESTIONS

BY LARRY SCHMITT
The Inovo Group

And those who were seen dancing were thought to be insane by those who could not hear the music.

— FRIEDRICH NIETZSCHE

THIRTY YEARS AGO, James March [1] wrote about the tension between the Exploration vs. Exploitation imperatives of large companies. In 2017, *Innovation Leader* published the results of a survey, "Innovation Teams and Business Units: Allies or Adversaries?" [2]. Clearly the problem has not been resolved. Deming taught us that variation is the enemy of quality, and we have spent the past 40 years stamping out variation in production, in development, and in all other matters of corporate behavior. Variation is the enemy of operational excellence. Reducing variation is how companies make profits, and how executives get promoted.

But with innovation, businesses must change, which in turn requires variation. Variation (and selection) are the drivers of evolution. Without them, species don't evolve, and they can go extinct. In a business world without variation, innovation can't happen, and companies can become irrelevant—and also go extinct. In 2011, O'Reilly and Tushman [3] built on the Exploration-Exploitation concept to create what they called the Ambidextrous Organization. Such an organization can achieve both operational excellence and transformational growth simultaneously. Unfortunately, this is far easier said than done.

The tension between operational excellence and transformational growth has been exposed and examined. But the problem is becoming ever more complex and companies still struggle. It's a struggle that is manifested in the "dance of the corporate innovators." The dance is happening within and between the groups and teams at the company that are "doing" innovation, but nowhere is the dance more evident than in the interaction between a company's business units and its corporate innovation group. Like any dance, it can be ad hoc and awkward, or it can be choreographed and powerful. More importantly, when the dance is choreographed well, it can channel the natural and unavoidable tension in creative and surprising ways. A new type of dance is needed for corporate innovators.

The Innovation Model that Underlies the Corporate-BU Dance
Operating businesses are now better at sustaining innovation. New tools and processes (such as Open Innovation, Voice-of-the-Customer, Stage-Gate 2.0, etc.) enable operating businesses to innovate successfully in or near to their core.

It's no longer an issue of "can a business innovate" but what types of innovation can a business achieve on its own? And are they sufficient to achieve strategic objectives (or, worse, to avoid disruption)? Unfortunately, the answer is usually "no."

To get a better picture of this, a tool such as the Strategic Innovation Canvas, shown to the right, is useful. It lets companies see where they are spending their innovation resources and being successful at it.

In the past 15 years, over 8,000 opportunities from a large number of on-the-ground, collaborative innovation projects with companies in a variety of industries have been mapped using this canvas. The evidence is clear. Even with teams chartered to come up with breakthrough, strategic opportunities, there is a "force" pulling them towards incremental opportunities squarely within the core businesses. This is natural. The closer to the core, the more certain you are of success and the clearer the path forward. The farther from the core, the stronger the force and the greater the tension. This takes many forms, some subtle and some blatant.

"I see no use for a Corporate Innovation Group. They go after unrealistic ideas that go nowhere. My business can make much better use of the money we spend on corporate innovation."
– President of a $2B business unit within a $10B company

Strategic opportunities are very different than sustaining opportunities. They should not be undertaken with the same processes, methods, and tools used for sustaining innovations. Stage-gate doesn't work well. You need another mechanism. Companies that are successful at strategic innovation typically embed this different

mechanism in their Corporate Innovation Group (CIG).

The problem to solve is not organizational—that is, whether the CIG should be "intertwined" with or "insulated" from the business units—but rather it is operational. And the source of tension occurs at the opportunity level.

There are four types of opportunities that the CIG deals with and needs to manage, both at a strategic level (setting the proper mix) and at an operational level.

Type 1   **BU Routine:** Opportunities a BU would surely pursue if they only they had more money. These are the opportunities a BU will clamor for the CIG to help with.

Type 2   **BU Stretch:** Opportunities that the BU see as interesting...eventually. Today, they are too far out or too risky. The BU can support the CIG pursuing these opportunities and will take them over once they are further along.

Type 3   **BU Transform:** Opportunities that the BU can't see as relevant to their business until there is "proof of value" (e.g., it's a nascent business creating real traction and revenue).

Type 4   **BU Antagonistic:** Opportunities that are of no interest to a BU, and never will be—no matter how successful they become. Even though they lie within the strategic vision of the company, the BU sees these opportunities as either a distraction or a threat and resists them.

A corporate innovation group should never take on Type 1 opportunities. It's a waste of strategic resources. Type 2, 3, and 4 opportunities should be the focus of the CIG. Type 2 should be undertaken with BU participation and with their "head in

the game."[2] Type 3 and 4 opportunities should be undertaken with no requirement of up-front BU commitment, but with a path that permits BU participation as the opportunity comes into focus. Type 4 opportunities are the ones a BU will never take on and will become their own BU, or take some other value-creation path (e.g., spin-off, divesture, etc...).

The tension between a company's short-term growth, driven by operational excellence and sustaining innovation, and long-term growth, driven by strategic innovation and transformational opportunities, becomes ever more pronounced in today's world of rapid change and uncertainty. The ability to sense potential disruption and transformation, and do something about it, becomes a critical competency. (Indeed, this is one source of Type 3 and 4 opportunities!) But spending time, attention, and capital on this creates the tension that reveals itself in the Corporate-BU relationship every day. It's a tension that can be destructive. But like a good dance, it can also be powerfully constructive and invigorating. Recognizing the sources and dimensions of this tension is the first step in creating the right type of dance for your company.

Larry Schmitt is Managing Partner at The Inovo Group.

[1]For very large companies with multiple large business units, the description and analysis of the Corporate Innovation Group applies equally well at the large business unit level. In this case, there would be two layers of 'CIG'—one at the overall corporate level, and one within the BU itself.

[2]People talk about 'skin-in-the-game.' While money is nice, it is attention and interest that are the most valuable.

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15

Global Innovation Hotspots
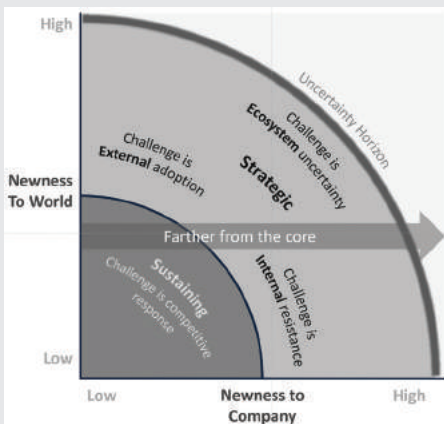
Our List of the Top Cities for Corporate Innovation*

By Dave Sebastian and Scott Kirsner

ILLUSTRATIONS BY MIKE LEMANSKI
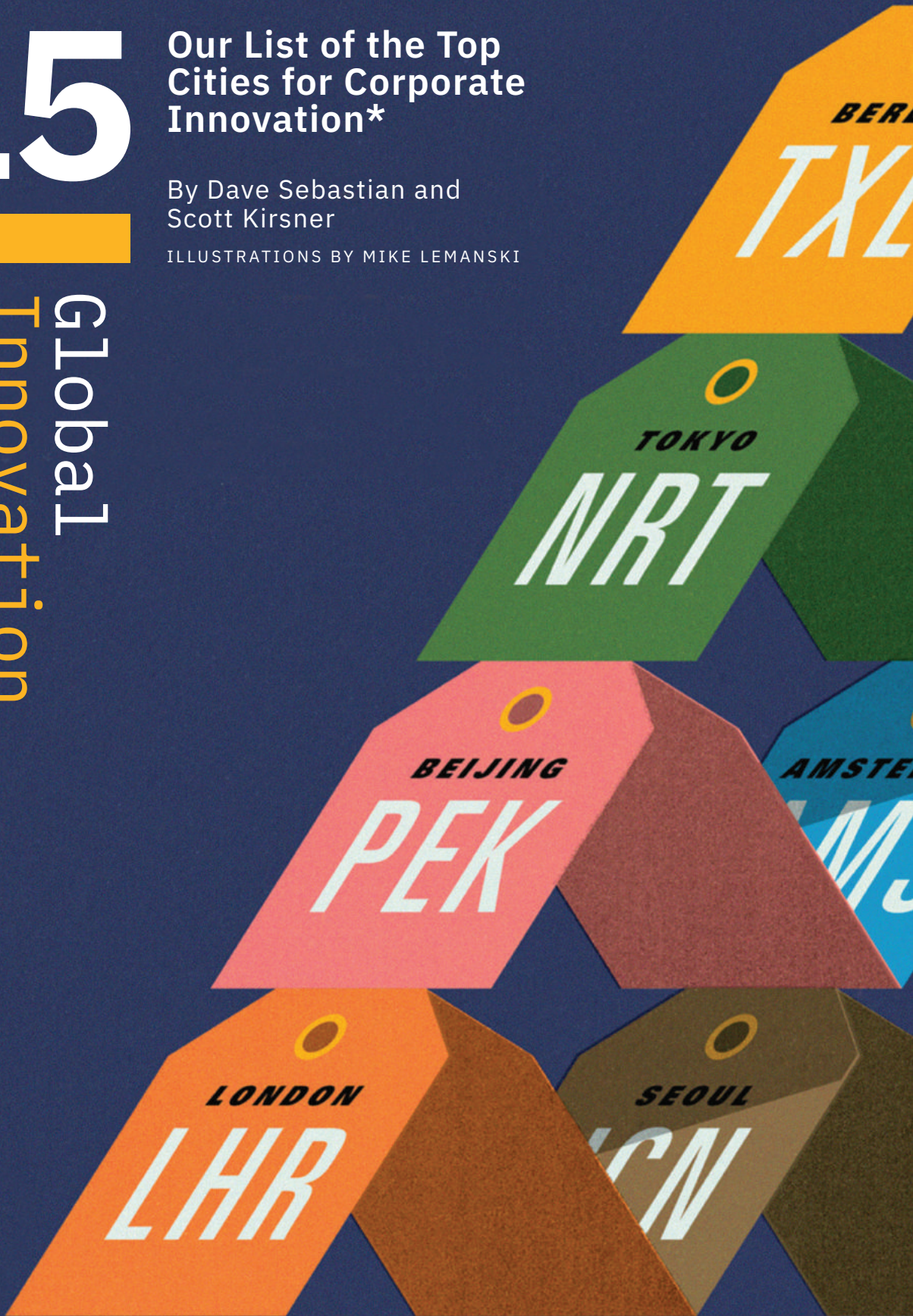
BERL...
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BEIJING
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LONDON
LHR

SEOUL
...CN

The phrase "corporate innovation" is a strange amalgam.

It suggests a big, established entity spawning something new. (To pessimists, it's an oxymoron.) Often, companies struggle to make it happen at their headquarters campus: "Let's take a group of employees, lock them in a room with a ping-pong table, and get some innovation!" ▬ But a growing number of companies are realizing the limits of that approach. They're looking at the world's innovation hotspots—places like Silicon Valley, Tel Aviv, and Beijing—and sending scouts to understand what's happening there that might tie in to their businesses. They're investing in, or acquiring, startups that have discovered something new and are building momentum. They're opening innovation labs, technology development centers, or partnering outposts, seeking to tap into local talent and collaborate with other players in a given ecosystem. ▬ It's an acknowledgment by these companies that the future of their industry might not just be growing inside the greenhouse of the corporate campus, but rather springing up halfway around the world. Better to know about it, plan, participate, hire, and invest—rather than be surprised by that future. ▬ For our list of the top cities for corporate innovation around the world, we examined an array of factors that create a constructive context for big companies that want to engage in ecosystems outside of their home turf. We took into account factors like:

▸ the presence of startups and venture capital funding

▸ top-notch universities cranking out new ideas, as well as smart and driven young people

▸ trade shows and conferences that bring people together to exchange ideas

▸ corporate headquarters of large companies with a global reach that spend heavily on research and development

▸ presence of other non-indigenous companies (think Google or J&J) with innovation centers

▸ shared co-working spaces, incubators, and accelerator programs that help new ideas take shape, and

▸ the overall economic competitiveness of the country, along with governmental support for entrepreneurship, venture capital, and innovation infrastructure.

We also sought input from more than a dozen investors, entrepreneurs, and executives who have worked and traveled widely—people who seek out deals in Shanghai or have run accelerator programs in Shenzhen, or who can compare the relative merits of the business environment in Jakarta versus Kuala Lumpur.

One important note about this list: In 2017, we put together a list of the top cities in North America for corporate innovation. (That list is on p.42.) This time around, we focused on all the other continents. So no San Francisco, Toronto, or New York on this one, worthy as they may be.

Want to make the case for another city? Take issue with our rankings? Share your thoughts on social media using the hashtag #ILtopcities, and we'll dive into the debate!

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01 Beijing

China

Beijing is booming.

On the last day of February, the Beijing Municipal Commission of Development and Reform rattled off a list of 300 major construction projects in the city, including 100 related to "high-end technological industries." The total investment in those 300 projects? $35 billion. And that doesn't include the new Beijing Daxing International Airport on the fringes of the city, slated to open in September. The price tag for Beijing's second major international airport, designed by architect Zaha Hadid and ADP Ingénierie of France, is expected to hit about $14 billion.

China, with its population of 1.4 billion, is already the world's second-largest economy. Investors have been vying to tap into the country since China kicked off its market reforms four decades ago.

"Beijing is like Washington, DC and San Francisco wrapped up into one," says Hari Nair, a fellow at Harvard's Advanced Leadership Institute and a former Kimberly-Clark innovation executive in Asia. "You've got the government. And all the startups, and obviously all the multinationals have a pretty significant presence in Beijing."

And with China's socialist regime playing such a strong role in the economy, "being close to the government is still a good idea in 2019," says Cyril Ebersweiler, the founder of Shenzhen-based startup accelerator HAX, which focuses on consumer electronics.

More than 50 Beijing-based companies landed on the Fortune Global 500 list. State-owned energy giants like **State Grid**, **Sinopec Group**, and **China National Petroleum** ranked second, third, and fourth on the list, respectively.

And *MIT Technology Review* in 2017 included two Beijing-based companies on its 50 Smartest Companies list: facial-recognition service **Face++** at No. 11 and Internet search and AI company **Baidu Inc.** at No. 50.

JD.com, headquartered here, is the largest retailer in China by revenue: about $55 billion in 2017. It operates both brick-and-mortar stores and highly-automated warehouses that take ad-

Beijing's new Beijing Daxing International Airport, scheduled to open in September.

vantage of robotic arms and mechanical exoskeletons that help workers lift heavy items, as well as artificial intelligence. And JD.com is also testing drone delivery for some products, both in China and Indonesia.

Beijing pulled in about 14 percent of the world's total venture capital investment between 2015 and 2017, according to venture capital research firm PitchBook. Startup accelerators like **Plug & Play** (with locations in Beijing and several other Chinese cities) help broker connections between those startups and corporates like BNP Paribas, Bosch, Nestlé, and Procter & Gamble.

Schools like **Tsinghua University** and **Peking University** crank out thousands of computer science, engineering, and life sciences grads. Research labs run by **Microsoft** and **Google** help turn those grads into industry experts.

While some foreign companies still prefer to put down roots in Shanghai, says Pascal Marmier of Swiss Re, Beijing is "the most active innovation environment in China, by far." Marmier spent four years working for the Swiss consulate in China.

02 London

🇬🇧 United Kingdom

Investors' waning confidence in the UK market (thanks, Brexit!) may have cost London its No. 1 status as the world's largest financial center, but a chunk of the world's foreign exchange trading still flows through the city—a whopping $5.1 trillion a day. London is home to financial services firms like Lloyd's, HSBC Holdings, and Barclays. All three are banking big on innovation: HSBC has a corporate investment arm, and both Lloyd's and Barclays run startup accelerator programs.

The Shard, London's tallest building

Supporting it all is **Innovate Finance**, the UK's four-year-old fintech trade body, which has funding from the City of London and roughly 50 banks and insurance providers.

Beyond fintech, there are artificial intelligence startups like **DeepMind** (acquired by Google for $500 million), and **Blue Prism**, ranked as one of the world's smartest companies by *MIT Technology Review*. **BrewDog** sells a line of craft beers; **Improbable** makes tools for videogame developers; and **Darktrace** is building an "enterprise immune system" to keep companies se-

cure. Shared office spaces like Campus London, Makerversity, TechHub, Rainmaking Loft, and Rocketspace house hundreds of up-and-coming companies.

"London is still a leading city when it comes to funding, supporting, and championing innovation—from the policy makers, regulators, investors, startups, and now the corporate sector—everyone wants to capitalize on London's unparalleled environment," says Claire Cockerton, a serial entrepreneur and founder of Plexal, a 68,000-square-foot "mini-city" designed to spur innovation. "Innovation budgets are becoming bigger and bigger, and there is a growing realization that innovation belongs in the corporate DNA, not as a side project led by one millennial hire."

Some of the world's top academic institutions lie just outside the city, in Oxford and Cambridge. But closer to the City of London is Imperial College, among the best schools anywhere for engineering, science, math, and technology, according to the QS Top Universities Ranking. In 2016, Imperial opened a new incubator at its White City campus that quickly filled up with 20 early-stage science and tech startups like **CustoMem**, which captures pollutants in industrial wastewater, and **Polymateria**, creating additives for plastic products that enable them to biodegrade.

Not to be left out of the picture are some of the biggest and best-known brands in the UK. The venerable **British Broadcasting Corporation** has a labs group, founded in 2012, that works on projects at the intersection of journalism, technology, and data. Retailer **Tesco** is exploring "convenience, immediacy, and personalisation," in the words of lab head Jo Hickson. **John Lewis & Partners**, which operates supermarkets and department stores, invites startups from around the world to participate in its Jlabs innovation programs and works with the most promising ones on pilot tests. And power company **Rolls-Royce**—the one that makes jet engines and nuclear reactors, not luxury cars—is developing micro-grid technology to take better advantage of renewable power sources, as well as electrically-powered aircraft engines.

03 Tel Aviv

🇮🇱 Israel

Israel may be a tiny sliver of real estate, but it punches way above its weight when it comes to R&D investment and entrepreneurial mojo. The US and China have the most companies traded on the tech-centric Nasdaq index—but in third place is Israel. According to the World Bank, no

4.25%

Amount of Israel's Gross Domestic Product spent on R&D—more than any other country

country invests more of its GDP (4.25 percent) on R&D. And residents like Jimmy Massatchi, Managing Partner of the tech scouting firm Innovantage Partners, boast that the country has a higher density of startups per mile than even Silicon Valley.

Global corporations are taking note: More than 350 multinationals across every industry have taken up residence in the country, from Nielsen and BNY Mellon to McGraw Hill and Alibaba. The nonprofit StartupNation Central, which spun out of the best-selling book of the same name, has played a role in educating and assisting those companies as they look to plug in to the Israeli entrepreneurial ecosystem, and the group regularly hosts corporate leaders from around the world.

The center of it all is Tel Aviv, where the **Technion** and **Tel Aviv University** crank out entrepreneurs, techies, and scientists, and several dozen venture capital firms hunt for their next deal. Newly-arrived investors include Pitango, aMoon, and OrbiMed, which invests in healthcare startups. But plenty of other well-known US venture firms have also staked a claim in Israel, from GE Ventures and Autodesk Investments to HP Tech Ventures and Verizon Ventures.

Website-hosting company **Wix.com**, big-data management company Attunity, and wireless backhaul solutions provider Ceragon Networks are a few of the fast-growing tech companies based in Tel Aviv. Their neighbors include innovation and R&D labs set up by more established brands like **Visa**, **Samsung**, and **Google**. Israel Ganot, the former head of the MassChallenge Israel startup accelerator, says there's action in "diverse fields of innovation, including cybersecurity, automotive, digital health, ag-tech, foodtech, water and energy, and fintech."

The mobility space appears to be particularly active in Israel, especially on the heels of two high-profile and multi-billion-dollar exits, **Mobileye** (acquired by Intel) and **Waze** (now part of Google). "There's generally a big trend in automotive," says Massatchi. "**Daimler/Mercedes** came two years ago, **Volkswagen** came nine months ago, and **BMW** will come in the summer [of 2019]. **Continental** did an acquisition of Argus Cyber Security in 2017, and that gives them a presence in Tel Aviv."

Massatchi says that the trend now is less about big companies setting up large R&D centers in Tel Aviv, "but it's more having an innovation or scouting team, or a few desks here— smaller teams of one to five people, maybe up to 25 people. They're scouting for investments and partly [for] R&D purposes."

In 2016, the Tel Aviv Stock Exchange and Taglit-Birthright Israel launched a visitor's center to

offer a glimpse of new technologies being developed in the country, the **Center for Israeli Innovation**. More than 80 companies use it as a showcase for their products, and nearly 4,000 groups have come through on tours since it opened.

04 Singapore

The island city-state of Singapore was a former British colonial backwater with few real resources when it broke apart from neighboring Malaysia more than 50 years ago. Now, it is the world's No. 4 financial center, with skyscrapers dotting its skyline alongside food stalls that have earned Michelin stars.

Singapore is also a magnet for VC investment. At $4.7 billion, the city-state attracted the most VC investment in Southeast Asia between 2015 and 2017, according to PitchBook data. Fast-growing startups include **Grab**, a transportation startup that received a $1.46 billion boost from the Soft-Bank Vision Fund in March.

The Singaporean government has also been pouring investments into the innovation space. The state-owned company **JTC Corporation** currently operates the sprawling research hubs **Biopolis**, which specializes in biomedical research, and **Fusionopolis**, which centers on physical sciences and engineering. One of the tenants at Fusionopolis is Sandcrawler Studios, part of Lucasfilm's Industrial Light & Magic special effects business.

"What is amazing about Singapore is [that] it runs like a corporation," says Hari Nair, a former Kimberly-Clark executive. "It sets a business plan and a strategy and just executes. Good or bad, it's an amazing place to be. If they've committed to it, if it's on a piece of paper, everybody rallies behind it, and it's going to happen." The newest component of Singapore's business plan: $700 million of research investment in artificial intelligence, cybersecurity, cell therapy, urban farming, and lab-grown meat.

Among the global firms based here are commodity company **Trafigura Group**, agribusiness giant **Wilmar International**, and the contract manufacturer **Flex**—all of which are in the Fortune Global 500. In March 2019, the British appliance-maker Dyson announced that it would relocate its corporate HQ to Singapore to "reflect the increasing importance of Asia" to its growth, according to a company press release. Dyson is also building a new electric vehicle here, slated to

hit the market in 2021.

Then, there's **Block 71**, which the *Straits Times* calls "the heart of Singapore's startup ecosystem." The former factory is jammed with more than 100 startups and investment firms, and it hosts several workshops and networking events every week. Block 71 "is an ecosystem builder and global connector which catalyzes and aggregates the startup community," says James Andrade, Chief Learning and Innovation Officer at the Singapore-based industrial real estate investment trust **Ascendas-Singbridge**.

The Global Innovation Index, co-published by Cornell University, INSEAD, and the World Intellectual Property Organization, had Singapore at No. 5 in its most recent ranking—tied with the US.

But now that just about every Fortune 500 company has an office in Singapore, "it's time to switch tactics," explains Hugh Mason, CEO of **Joyful Frog Digital Innovation**, which helps craft new businesses with participation from corporates and entrepreneurs. "Instead of making Singapore a key part of someone else's value chain, which worked very well to build prosperity through the first decades of nation-building, the emphasis now is on helping corporates to innovate [and] to generate new value chains that are anchored here in Singapore for [the Asia Pacific region's] massively expanding markets." One key, Mason says, will be "leveraging the trust and integrity that many project onto Singapore's island of stability in a region of economic and political upheaval."

05 **Shanghai**

China

Thirty years ago, Shanghai's Pudong district was a sparse cluster of factories and warehouses—nothing fancy. Now, the neighborhood has sprouted a forest of futuristic skyscrapers, emblematic of the growth spurt that has turned China into a major economic force.

Shanghai is the city many global firms have chosen for their Asian R&D or corporate VC presence—among them **General Electric**, **DuPont**, **Michelin**, **Johnson & Johnson**, and **L'Oreal**.

Apart from hosting brand-name companies, Shanghai is also one of China's hubs for startups, attracting nearly $24 billion in venture funding between 2015 and 2017, according to PitchBook data. Foreign entrepreneurs like to get a foothold in Shanghai because of the city's copious startup resources, especially in the fintech sector, says Pascal Marmier of Swiss Re.

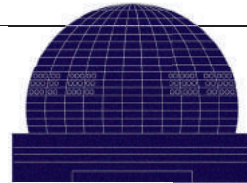In March, **Yum China Holdings**, a spin-off from the American fast food company Yum! Brands, opened the doors to a new 27,000-square-foot innovation center in Shanghai, complete with a test kitchen. Yum China develops several hundred new products each year, including menu items like Okinawa sea-salt ice cream for KFC and durian pizza for Pizza Hut. (Yum?)

Shanghai's universities supply a stream of talent to companies here. Among them are the highly selective **Fudan University**, **Shanghai Jiao Tong University**, and **Tongji University**. Accelerators and incubators based here include **Chinaccelerator**, **XNode**, and **BCG Digital Ventures**.

06 **Stockholm**

Sweden

From construction to apparel to podcasts, Stockholm is home base for an impressive range of industry leaders like **Skanska**, **H&M**, and **Spotify**, the streaming music service that went public in 2018 and in 2019 has been snapping up podcasting networks like Gimlet Media and Parcast. Also here are **Ericsson**, investing big in 5G wireless network technology and services to support the Internet of Things, and **Electrolux**, the world's second-biggest appliance maker (after Whirlpool).

The Ericsson Globe, an arena in Stockholm

Sweden clocked in at No. 3 on the Global Innovation Index for 2018, the ranking put out annually by Cornell University, INSEAD, and the World Intellectual Property Organization.

The Swedish capital attracts about 15 percent of all the foreign direct investment that goes into European tech companies, according to the Wharton School of Business-affiliated site Knowledge@Wharton. And over a 14-year period, from 2000 to 2014, acquisitions of tech companies totaled almost $25 billion. That sum includes Microsoft's acquisitions of **Skype** and **Mojang**, the maker of the game Minecraft—but not the acquisitions of **King.com**, creator of Candy Crush, or **iZettle**, a digital payments company acquired last year by PayPal. And the VC and incubation firm Wellstreet is slated to launch the Nordic region's largest innovation hub, **The Factory**, in a Stockholm suburb this year. It will accommodate up to 100 startups.

With a population of less than one million, Stockholm produces more unicorn startups per capita than any place on earth, according to Knowledge@Wharton—aside from Silicon Valley.

07 **Bangalore**

India

Some see Bangalore as the Silicon Valley of India; others as Outsourcing City, a place that draws software and customer service work because of a well-educated and English-speaking populace. But Bangalore is carving out its own identity in the 21st century, with help from newly-minted unicorn startups like OYO, a hotel chain; Swiggy, a food delivery business; and Byju's, an online learning platform.

Then, of course, there's **Flipkart**, the e-commerce giant acquired last year by Walmart in a $16 billion deal. While Flipkart hasn't yet turned a profit, it has spawned a whole new generation of entrepreneurs. An estimated 177 startups trace their roots back to Flipkart, according to the venture capital tracking firm Tracxn.

And Bangalore's two IT services giants, Wipro and Infosys, have also helped fertilize the startup fields here: More than 1,500 other companies were founded by veterans of those two firms, according to Tracxn.

Global companies like **Accenture**, **IBM**, **Qualcomm**, and **Royal Dutch Shell** have flocked to Bangalore to open innovation or R&D labs. And real-estate company JLL in 2018 named Bangalore as the world's No. 1 "most dynamic city" for its growth as an urban economy in an emerging market.

Recent grads from the **Indian Institutes of Technology** or the **Indian Institute of Management** used to prefer to work for multinational employers like Cisco, Microsoft, or Infosys, says Imran Sayeed, a senior lecturer at MIT's Sloan School of Management and former Chief Technology Officer for NTT Data, the global IT services firm. "They put together these amazing campuses, and they became the go-to choice for the best graduates." But more recently, Sayeed says, "the startups are now the preferred choice, because people have seen the success of Flipkart and others. And their parents are fine with them going to work for a startup, because they've seen the role models."

08 **Amsterdam**

The Netherlands

While the typical tourist might visit Amsterdam to enjoy some of its mood-modifying substances—**Heineken** beer, perhaps, or space cakes—the city is also home to global-scale companies. Heineken is the world's second-largest brewer, after Anheuser-Busch InBev, and banking biggie **ING Group** has been moving fast in blockchain, artificial intelligence, chatbots, and APIs for external developers. ING's new headquarters campus, slated to open in 2019, will be "an innovation hub for start-ups, scale-ups, and entrepreneurs," according to a company announcement. **Philips**, with $18 billion in annual revenue, is now focusing entirely on healthcare, and has sold off businesses in lighting, television, and appliances, which CEO Frans van Houten sees as quickly becoming commoditized. Philips' research group employs about 1,200 people—and works on everything from next-generation cardiac ultrasound technology to electric shavers that can cut as close as a blade.

A less familiar name is **Here**, a mapping software firm owned by a group of automakers that now employs about 6,500. It is working on next-generation mapping technology that will help autonomous vehicles navigate.

The **Startupbootcamp** accelerator program has been active in Amsterdam since 2012, and five years later, the Fashion for Good Accelerator launched; with support from corporate partners like Galeries Lafayette, Target, and Stella McCartney, it seeks to foster more sustainability and responsible sourcing in the apparel business. And there are venture capital investors like **Peak Capital**, which invests in software and data-driven startups, and life sciences-focused **M Ventures**, part of the German pharma company Merck KGaA.

"What I see as most interesting in the Amsterdam/Rotterdam region right now is the focus on impact—energy transition, climate change, etc.," says Melissa Ablett, general manager of **CIC Rotterdam**, a shared workspace in that city. "Innovation teams, corporates, down to almost every

Stockholm's Tekniska högskolan
metro station, near the city's Royal
Institute of Technology.

startup are figuring out how they fit in to the UN Sustainable Development Goals, and the Dutch are positioning themselves as the entrepreneurial leads, testers, and early adopters of anything fitting in these themes. There is a huge sense of shared responsibility around the world's problems here."

The Global Innovation Index puts the Netherlands at No. 2 on its list, just behind Switzerland.

09 **Tokyo**

Japan

By some counts, Tokyo is the city with more corporate headquarters than any other: about 600.

Brand names like **Canon**, **Mitsubishi**, and **Honda** are among the 37 Tokyo-based companies that show up on *Fortune*'s Global 500 list. (You may think about fuel-efficient sedans when you hear Honda, but the company is also building robotic lawnmowers and business jets these days.) Tokyo is also home to the tech giant **SoftBank**. In addition to selling mobile devices, electric power, high-speed internet, and consumer robots, the company is also a major investor in startups around the world with its $100 billion (yes, billion) Vision Fund. Among the US companies SoftBank has backed: Uber, WeWork, DoorDash, and Wag, an app for dog walkers. (Plus, other startups in Singapore, India, China, and Kenya.)

Government-supported startup programs in the city include **J-Startup** and **Edge-Next**. In March 2018, a weekly "Venture Café" gathering for entrepreneurs began taking place every Thursday—and within a year, it had attracted about 10,000 guests, according to Yasuhiro Yamakawa, its executive director and a professor of entrepreneurship at Babson College.

The marketplace app **Mercari**, similar to Craigslist, went public last year on the Tokyo Stock Exchange, selling $1.2 billion in shares. Other startups like **Preferred Networks**, which counts Toyota as its biggest investor, could soon follow suit. Preferred is focused on applying deep learning technology to the manufacturing industry; among its early customers is Fanuc, the world's biggest producer of industrial robots.

Japan is also one of Asia's education hubs, with 103 universities listed on the World University Rankings 2019. Among those in Tokyo are the **University of Tokyo**, whose alums have become astronauts and prime ministers; the **Tokyo Institute of Technology**, Japan's largest sci-ence-and-technology school , with about 10,000 students; and **Waseda University**, the alma mater of many business leaders at companies like **Sony** and **Toshiba**.

10 **Berlin**

Germany

A hub for the automotive and advanced manufacturing industries, Germany ranks as the world's most innovative economy, according to the World Economic Forum's 2018 report. But many of the biggest players are based in cities like Munich and Stuttgart. That created a vacuum in Berlin that startups are filling. Grocery-delivery service **HelloFresh** is here, as are the audio hosting service SoundCloud; language learning app Babbel; and ResearchGate, a social network for scientific researchers.

Tech giants like Facebook, Google, SAP, Amazon, and Apple all have outposts in the city, and in 2018, the industrial equipment maker **Siemens AG**, headquartered in Munich, announced a major $681 million project to build Siemensstadt—a 170-acre science and technology hub on a site where Siemens' predecessor company once operated factories in the late 19th century. The **Spielfield Digital Hub**, located in a former postal-distribution center, brings together corporates and startups to help the corporates run more experiments in the digital realm.

"Over the last couple of years, Berlin has become one of the main hubs for tech and digital health innovation in Europe," says Annika Pierson, Chief Operating Officer of the government-supported **German Accelerator**, which helps startups enter the US and Asian markets. "A key component of this ecosystem are local incubators and company builders like Flying Health and international accelerator programs such as German Accelerator and Techstars that help companies in building the right business strategies, and provide access to very experienced mentors as a resource. Several companies, including Ada Health and N26, have built their success stories in Berlin and attracted major funding from international investors."

Media giant **Axel Springer**, the biggest publisher of newspapers and magazines in Europe, has a corporate venture capital arm called Digital Ventures, which has put money into Airbnb, Uber, and the augmented reality startup Magic Leap. It also operates two accelerator programs, APX and Axel Springer Plug & Play.

Among the top universities here are **Humboldt University of Berlin**, which has links to

39

Number of
universities in
Seoul, a city of 10
million people.

the winners of 55 Nobel Prizes. Berlin also attracts professionals of various stripes every year through its trade shows, among them the **IFA Consumer Electronics Show**, the **Berlin Air Show**, and **E-Commerce Berlin Expo**.

11 Seoul

🇰🇷 South Korea

Some reviewers argue that **Samsung**, headquartered here, makes the world's best smartphone. It's also moving fast into virtual reality and three-dimensional image capture with the Gear VR headset and Gear 360 video camera. **Hyundai Motor Company** will soon start producing a new line of electric and plug-in hybrid vehicles, the Ioniq. And at the Consumer Electronics Show this past January, **LG Electronics** was hyping a new artificial intelligence offering, ThinQ, which will learn your preferences over time. (LG also announced a roll-up TV screen and a $1,400 home clothes-pressing system, the Styler.)

South Korea's sprawling family-owned conglomerates, or chaebols, have traditionally dominated the business scene here. But Seoul has become more hospitable to startups recently, says Cyril Ebersweiler of HAX.

"The startup activity is one of the highest in Asia, and some will get their footing—if they are not strangled by the chaebol," Ebersweiler says. The poster child: Coupang, an e-commerce startup that notched roughly $5 billion in revenues last year.

Hugh Mason of JDFI agrees with Ebersweiler: "Both the quality and quantity of Korean startups is increasing rapidly, [and] the level of international awareness is rising fast in a nation that has often looked inwards." Mason adds that "there are still cultural reasons why, as in Japan, young South Koreans may feel pressured to join large corporations, but the knowledge that there are other options is spreading fast."

The government is pitching in: In September 2018, it began doling out money from a $9 billion investment fund with a focus on drone technology, AI, and fintech.

South Korea is also known for its top universities, with 29 of them on the most recent *Times* Higher Education World University Rankings. Some of the most well-known are based in Seoul: **Seoul National University**, **Yonsei University** and **Korea University**.

Seoul might be higher on our list—but for its insularity. "It is hard to do anything in Korea if you're not Korean, and that can keep other corporates out," says Michael Davies of the manage-

ment consulting firm Endeavor Partners. Davies is also a guest lecturer at the London Business School.

12 Basel

🇨🇭 Switzerland

With a population of just 177,000, Basel is the smallest city on this list, nestled in the north of Switzerland near the borders of Germany and France. But it's a major center of scientific innovation, home to **Novartis**, **Lonza Group**, and **Roche**, as well as divisions of other pharma companies, like Bayer's consumer health group and **Actelion**, part of Johnson & Johnson that focuses on rare diseases. (Roche and Novartis together spent nearly $20 billion on research and development last year; they're the only Swiss companies in the top 20 spots on that list, along with Intel, Apple, and Facebook.) A Swiss economic development agency, BaselArea.swiss, counts 600 life sciences companies in the Basel region, in addition to the presence of hospitals, universities, and research centers like the Friedrich Miescher Institute for Biomedical Research, which explores scientific fields like neurobiology and epigenetics. The **Switzerland Innovation Park**, managed by BaselArea.swiss, provides office and lab space to fledgling companies.

Fun fact: Basel is where LSD was invented, in 1938, by pharma researcher Albert Hofmann, who also went on the first LSD trip—accidentally.

Venture capitalist Michael Greeley calls Basel "the ultimate company town dominated by a few very large multi-national pharma companies." Having Novartis and Roche located just across the Rhine River from one another "is like having the Yankees and the Red Sox in the same city," Greeley adds. That said, the independent startup scene is still nascent, and there's a "very limited venture capital community" in Basel, Greeley says.

Still, Switzerland as a country shows up in the

top spot of the Global Innovation Index. Pascal Marmier, the Swiss Re executive who previously worked in the Swiss consulate, notes that there is "strong government support at every level, even for small firms."

Basel is also home to a number of other non-pharma businesses, like **Viking Cruises**, **Swiss International Airlines**, **UBS** (co-head-quartered here and in Zurich), and **Coop Group**, a Fortune Global 500 retailer that operates 2,295 supermarkets, department stores, pharmacies, and garden centers.
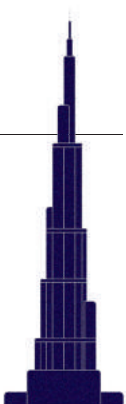
13 Shenzhen

China

Shenzhen is home to the consumer drone-maker **DJI**, as well as **Tencent Holdings**, which owns the social network **WeChat** (China's biggest). **Huawei Technologies** and **ZTE Corporation**, two makers of networking technology that are both mired in US federal investigations concerning cybersecurity threats, are also based in the booming manufacturing center. Hundreds of thousands of workers staff the biggest **Foxconn** electronics assembly facility in the world at Shenzhen's Longhua Science & Technology Park. But Shenzhen is transforming itself from a factory town "into an innovation powerhouse," says Cyril Ebersweiler of **HAX**; it operates a 50,000-square foot prototyping facility in the city. Marmier at Swiss Re says it has potential to be "the future hot spot in Asia," adding that Shenzhen's "link to Hong Kong will be key to bringing the region to the next international level."

14 Dubai

UAE

What modern city has made a higher-profile play for the future than Dubai, with its artificial islands, underwater hotel rooms, the world's tallest building, and one of the world's best-rated airlines, **Emirates**, flying into a major international hub? Dubai is also set to host **Expo 2020**, which will bring 190 countries to town and run for 173 days. Dubai has a "dazzling veneer of innovation," says venture capitalist Michael Greeley, who adds that he has "concerns about how deep does it actually run?" Greeley says Dubai is "clearly a gateway to unex-ploited regions of the world such as the Middle East and Africa, with an unclear path forward."

MIT's Sayeed, who grew up in Dubai, says that while the city is "an incredible tourism center" with lots of state support for innovation, "that doesn't necessarily mean that it has translated into startups." But it is certainly a dominant business hub in the Middle East. Davies of Endeavor Partners says that Dubai benefits from being "extremely receptive to people coming in—you can arrange meetings there that would be impossible to do in Saudi Arabia, and you can have women at the meetings." That's helpful not just for the corporate executives from around the world, but also for "traders and entrepreneurial people," Davies says.

15 Jakarta

Indonesia

Westerners may not be familiar with the ojek, or motorcycle taxi. (Driver in front, rider on the back.) But Indonesia's first unicorn startup, **Go-Jek**, is a startup that app-enabled that popular and zippy form of transport. Like its California cousin Uber, Go-Jek also offers food delivery, but it has diversified into lots of other businesses—from mobile payments to ticket sales to massage on demand. As of February, the company's valuation was pegged at nearly $10 billion. And Jakarta is home to other fast-growing startups like **Traveloka**, an online travel booking platform, and **Tokopedia**, an online marketplace and provider of financial services. The latter raised $1.1 billion in fresh capital at the end of 2018.

Indonesia, already the world's fourth most populous country, is a market that's destined to grow—and it's home to a massive population of digital natives who grew up in the post-1998 democratization era. "There's some real magic happening," says Nair. "If I were to put my money down on an innovation center, I'd put it on Jakarta."

The government also is working to support the local startup scene. The administration of President Joko Widodo has launched an entrepreneurship program that aims to spawn 1,000 startups by 2020.

Among the multinational companies with a strong presence in Jakarta are **Unilever**, **Google**, and **ExxonMobil**. The nonprofit Endeavor has provided support for dozens of Indonesian entrepreneurs, including **Bukalapak**, which offers e-commerce services to small businesses, and **Mapan**, a community-based lending platform acquired by Go-Jek in 2017. ●

The Burj Khalifa, at 163 floors the world's tallest building

"Don't give up. Make something happen every day."
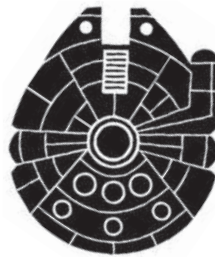
Kyle Quinn, PACCAR

3

Software development at light speed:
How the Air Force's **Kessel Run Experimentation Lab**
is changing the way code gets done

BY DAVE SEBASTIAN

PHOTOGRAPHS BY TONY LUONG

Agile AF*

***AF**=
Air Force, Adam Furtado
(right),and, yeah, also the
other thing.

When picturing what it's like to work for the **United States Air Force**, you might think of perfectly-pressed blue uniforms in a government facility — maybe one with concrete, bunker-like walls near a busy airfield.

But the employees of Kessel Run Experimentation Lab are located about 13 miles from the closest base, and they sip cold-brew coffee and craft software code with a view of Boston Harbor.

At Kessel Run, a new Air Force-run software studio, people in t-shirts far outnumber those in uniform. The workspace has that startup vibe, partly because it's managed by WeWork, the co-working firm. The glass front doors are emblazoned with a black logo inspired by the Millennium Falcon (which "Star Wars" fans know as the spacecraft that could make the Kessel Run in less than 12 parsecs), and conference rooms have Star Wars-inspired names like Scarif and Tatooine.

Named for the route that Han Solo often traveled while smuggling contraband, Kessel Run operates as if it is "smuggling [new software development approaches] and innovation into the world's largest bureaucracy," says Kessel Run Director Adam Furtado.

Kessel Run's team of about 200 staffers seeks to move from initial whiteboard ideation to getting working software to users in as fast as 88 days. That can be a tall order—especially in an environment like the Air Force, where a chain of command and required approvals prevail, and status is all about the stripes on your uniform.

While the military's traditional structure and hierarchy might be key to success on the battlefield, Furtado says, "You need the opposite environment to have creativity thrive."

"We do a lot of work here to build psychological safety [for] our teams," Furtado says. "Everybody's on a level-playing field—[we have a] flat management structure. ... The best idea wins. They're not bogged down by rank, and things that traditionally exist within the military."

THE KESSEL RUN ORIGIN STORY

Kessel Run started when a group of employees at Hanscom Air Force Base in the Boston suburbs began considering new ways to revamp an array of legacy software systems, which were developed about a decade ago, Furtado says.

"We got together and said, 'How can we move these [software systems] into the cloud?'" Furtado recalls. "'How can we move the needle and stop doing the status quo?'"

So Furtado and his colleagues reached out to the Defense Innovation Unit, a Department of Defense organization that works to acquire military technologies in new ways, to learn how their approach might be relevant to software. They then partnered with Pivotal Labs, a San Francisco-based software and services consultancy.

According to Furtado, the team was focused on one question: "There are tons of regulated, bureaucratic industries that have been able to make significant changes. Why can't we do that?"

Embedding new software into the military's classified networks and domains used to be a years-long endeavor, Furtado says. At Kessel Run, the wheels are turning faster with automation and more fluid communication.

"Traditionally, you get stuck behind waiting on email responses. ... [At Kessel Run,] we have teams that are co-located and talking all day long. It really cuts down on the communication overhead in order to get things done."

And Furtado points out a big "first" for Kessel Run that helps the group maintain momentum: "We have a continuous authority to operate, which is a first in our industry," Furtado says. That means that bits of code and fixes, after being tested, can go onto the network and into production continually—rather than having a fully-built system get tested only when it's "finished." It's a widely-used approach from the business world that hadn't previously been approved inside the Department of Defense.

BUILDING THE TEAM

Hiring in the military often runs on a longer timeline, due to extensive background checks and security clearances. According to Furtado, the process typically takes between four and six months.

Compared to that, Kessel Run's search for new talent moves at light speed. At a January hiring event, the software development group onboarded an applicant within four hours of meeting.

"We were able to vet candidates ahead of time," Furtado says. "Then, we had [candidates] come in. The people who had to make all these approvals—[which] usually stretched over months waiting on people to get to certain things, or approvals to be made, or signatures and papers—they all came [to our office] physically."

In order to attract talent with varied experiences, Furtado says Kessel Run hires both civilians and members of the armed forces. According to Furtado, half of the 50-some civilians hired in January had no military experience.

"It's really [about] adding new voices, and bringing in some industry talent," he says.

With rapid growth and a blend of employee experience sets, Furtado says his team uses a buddy system, which pairs new hires with more experienced employees.

"We have teams that are co-located and
It really cuts down

Employees gather in the common area of Kessel Run's office for the daily stand-up meeting.

talking all day long.
on the communication overhead in order to get things done."

ADAM FURTADO, KESSEL RUN DIRECTOR

"We do paired programming here," Furtado says. "It enables us to bring in new talent, pair them with people who have been here, who are being immersed in this culture...and allow mitosis to take care of the rest..."

Among the tasks some of the new hires were given: crafting software for the Autonomous Logistics Integration System, a string of applications that gives operators of the F-35 Lightning II fighter jet the ability to delve into the aircraft's operations and maintenance data.

THE NEED FOR SPEED

In the private sector, investors pour money into a company to support its operations, hoping to get a return on their investment. But Kessel Run is driven by something different: Air Force leadership holds the team accountable.

"I'm not being judged by my profit that I'm producing, or having to answer to shareholders," Furtado says. "We have to make sure we are truly understanding the strategies of commanders and [Air Force] stakeholders, and make sure that we're actually meeting their needs."

In order to serve the military community, Kessel Run treats speed as crucial to its mission, Furtado says. "Speed becomes a new security," he says. "In a previous world, with legacy systems, you're unable to adopt very quickly. ... [Now,] we're able to react within minutes. How fast can we get notifications of something? Then, push an update to fix that."

Kessel Run has set up "growth boards" to track progress and assess new ideas—a group of leaders that meet quarterly, and seek to emulate how venture capitalists choose which ideas to back and with how much money. Employees can pitch projects, demonstrate how they might add value, and, for projects already underway, make the case for why Kessel Run should keep funding them, Furtado explains.

The growth boards are one of the ways Kessel Run can ensure fast feedback loops. Furtado says they help the team "adapt, and expend resources in other places if we're not achieving the value that we thought we're going to."

That means that failure isn't a taboo topic at Kessel Run. Furtado says employees have the "freedom to be open about those [failures] and those learnings."

"It's great when people come to me and feel comfortable [saying,] 'Hey, we missed the mark here; we need to go this direction.' I like that," Furtado says.

KESSEL RUN'S IMPACT

Kessel Run doesn't operate on a commercial scale. The applications it works on are typically used by thousands of people, Furtado says, but not hundreds of thousands. And the team's product development approach involves layers of small-scale testing and prototypes, he says.

With each new application, "we usually deploy first to a small subset of our user community to

Kessel Run has worked on software that allows F-35 Lightning II operators to manage the aircraft's operations, maintenance, and data streams.

make sure we are testing those things and getting feedback," Furtado says. "Everything we do is based on testing. Every line of code that we write, we first write a pass-fail test for it..."

A significant chunk of Kessel Run's work is geared toward optimizing the way the Air Force uses expensive aircraft and flight time. The JIG-SAW tanker planning tool, for instance, automates the process of planning aerial refueling.

"We're at a point now where the efficiencies that we've gotten from that are saving about $12 million a month in fuel, just by doing some automation and optimization," Furtado says.

And by automating some of the labor-intensive data entry work involved in orchestrating combat operations, Kessel Run has helped save about 1,100-man-hours per month, the Air Force said in a recent press release. The lab has also made it easier for roughly 280 different groups inside and outside the military—like civilian contractors—to collaborate more efficiently on building and maintaining software applications.

Since Kessel Run was created, about 18 of its applications have been deployed in combat and military exercises, and it has attracted a budget of nearly $140 million, according to the Air Force.

DON'T LOOK FOR THE CHECKLIST

Senior military leaders visit Kessel Run's office regularly. "We learned early on that we had to find some senior champions that were going to carry the mantle for us, [since] there is only so much we can do at our level," Furtado says. "It's important to find the people who want to evolve as senior leadership, so that they can help tell your story and help remove some of [the] roadblocks along the way."

Other government entities can emulate aspects of Kessel Run's culture of learning and evolution, Furtado says. But there's a caveat: Don't imagine there's a checklist that can instantly turn your team into the next Kessel Run.

"It takes thousands of hours of deliberate practice, and hard work, and learning, and diving into things," Furtado says. "That learning along the way is what allows you to be a successful organization going forward. It's hard work." ⬡

Kessel Run operates out of a Downtown Boston office that is managed by WeWork. Meeting rooms all have *Star Wars*-inspired names.

HOW DO YOU UNLOCK INNOVATION?

BY KEN TOOMBS
PA Consulting

INGENUITY ISN'T THE preserve of a select few. It's the fundamental driving force of humanity. It's the thing that turned small villages into global cities. It pushes us all to go further, faster, and it's central to innovation.

So, why do traditional business models quash ingenuity and the innovations it gives rise to? Why do they concentrate power at the top, giving it to those furthest removed from the day-to-day operations that can, when evolved, keep organizations ahead of their competitors? And why do they fall back on complex legacy structures and systems that slow the time it takes to get value from new ideas?

We're at a tipping point in disruptive innovation, with one-sixth of organizations set to fail in the next five years because they can't keep pace with change. It's vital for old dogs to learn ingenious new tricks.

Here at PA, our work with businesses around the world has taught us organizational agility is the key to unlocking innovation. This is an understanding supported by our research–when we spoke to 500 business leaders internationally, we found that the most successful companies are more agile. The top 10 percent of businesses by financial performance are 30 percent more likely to display agile characteristics. Specifically, they center on their customers, speed up time to value, design for simplicity, build to evolve, and liberate their people.

By focusing on these five aspects of agility, these leading businesses have teased innovative ideas out of every part of their organization, quickly discovering what works to stay one step ahead. If others are to keep up, they must do the same.

Center on the Customer
As customers increasingly see companies and brands as a means to an end, brand loyalty is diminishing. This phenomenon is something we call the Customer 4.0 revolution—a world that's led by customers who are more outcome-driven. Organizations need to be able to quickly pivot to their empowered customer's evolving demands.

Pay attention to what customers are saying and listen to their feedback. This isn't just about finding out what customers want, but also about meeting their unmet needs.

Bring customers into the innovation process. Co-creation goes beyond traditional market research tools like surveys and questionnaires. In today's hyperconnected world, it can be as simple as testing ideas through social media, or as involved as running day-long workshops with customers to get in-depth feedback in person.

Don't stop there. With all that customer feedback, top companies constantly look for ways to prioritize innovation against it. Our research showed they have a unique ability to re-prioritize products and services based on analysis of changing customer demands. And they do so quickly.

Speed Up Time to Value
New competitors and changes in customer behavior can come about almost overnight, causing sudden disruption. For incumbent organizations,

responding can be a problem—legacy processes slow the time it takes to get value from innovation.

Overcoming this problem starts by taking the learnings from centering on the customer and reorganizing resources to deliver customer outcomes. Outpace competitors when it comes to rolling out improvements, and invest in moving from idea to launch at pace. That means investing leadership priority into taking innovations from concept to launch more quickly, rather than leaving delivery to the doers.

With top leadership invested in removing barriers, it's possible to focus efficiency programs on delivering differentiated products and services quickly, rather than cutting costs. By setting up the systems to adapt and experiment with new products and services, businesses can get much more value than they would from short-term cost savings.

Finally, nothing compares with the real world when it comes to understanding what customers really want. So, minimize your research and lab work before getting innovations in front of real customers to understand whether they'll succeed.

Design for Simplicity
Setting up systems to take innovations to market quickly is one thing, but organizational complexity can hold efforts back. In fact, 60 percent of leaders we surveyed said that "complex organizational structures with too many layers of management" are a barrier to responding to market change.

To answer this challenge, build teams around products and services rather than skills. By having all the skills needed to deliver an innovation working alongside each other, it becomes easier to collaborate and move quickly.

Support these cross-functional teams by empowering people to make decisions. Not everything needs to be flagged to the top, and front-line staff often have the best information on which to base a decision.

What's more, empowering people will naturally lead towards a flat organizational structure with fewer layers of management. Focused management is a powerful guide, but excess management is debilitating to innovation.

Build to Evolve
It's not just products and services that must be innovated; whole businesses need to evolve. Too often, we see organizations reluctant to change course and committed to ideas that used to work but now seem dated.

Key to evolving in line with the wider world is having flexible technology platforms. Old technology stacks serve specific functions and processes, meaning it's hard to evolve them in response to changing demands. Modern platforms, on the other hand, are flexible, modular, and typically cloud-based, meaning it's easier to evolve them at pace.

Such modern systems also make it easier to collect data intelligently, curating it so advanced analytics and artificial intelligence can inform decisions based on less obvious customer trends. This lets leading businesses accept changes at any point in the development cycle, because they have the data to prove what will work.

Flexible platforms and better use of data can also have a profound effect on your people, helping them be more responsive to change. If the people in an organization aren't adaptable, the organization won't evolve.

Liberate your People
While agile systems and processes are vital to spurring innovation, so are people. It's the people within an organization who use their ingenuity to innovate. And to get the best out of them, businesses need the right culture. Sixty-eight percent of the most successful businesses recognize agility is about shifting a culture, not just implementing a process.

Achieving fundamental culture change is about defining values and behaviors and weaving them into the fabric of everything you do. There isn't a one-size-fits-all approach. But by listening to your people, you can take a user-centric approach to build a dynamic culture that empowers them to contribute their ideas, enabling greater innovation.

Leaders are central to this. They can create a vision for the organization so people can connect with its core purpose and ensure the technology infrastructure and workspace are set up for collaboration. When people work together around a shared vision, they have the freedom to come up with innovative ideas.

Organizational Agility Unlocks Innovation
By centering on customers, speeding up time-to-value, designing for simplicity, building to evolve, and liberating people, organizations can become more agile, driving innovation in the process. That's because when we focus on what people really want, find new ways to deliver it quickly, remove layers of management, adapt systems to flex with changing demands, and give real power to the whole workforce, genuine innovations are free to develop.

Our vision is of an agile organization. One where people work in aware, alert, inclusive, and responsive teams. Where we tune into and bounce off each other, attentively and rapidly responding to our customers and competition. Always one step ahead.

Are you ready to become an agile organization and unlock innovation?

Ken Toombs is the Head of Americas at PA Consulting.

CON

By Kelsey Alpaio

Why truck-maker PACCAR
is seeking partnerships with
Silicon Valley startups

VOY

W

When Elon Musk first teased the all-electric Tesla Semi in 2017, he promised "a very spry truck" that would drive "like a sports car."

We'll have to wait until later this year to see if that statement holds up, but what's clear now is that Tesla isn't alone in the ring when it comes to electric, autonomous, and smarter trucks. Google's parent company, Alphabet, owns a business called Waymo, which is working on autonomous semis. Startups are building app-based solutions like Uber Freight, Convoy, and Transfix.

And of course, there are the established players—like PACCAR, the 113-year-old manufacturer of brands like Kenworth, Peterbilt, and DAF. The company, which also has financial services, information technology, and parts distribution arms, earned a record net income of $2.2 billion in 2018. And, according to Kyle Quinn, PACCAR's first-ever Chief Technology Officer, they're not afraid of new entrants to the industry—they want to connect.

"One of the reasons we think it's so important to be engaged with these [startups] is one of them may make a breakthrough, and, ultimately, have a capable solution," says Quinn. PACCAR is already collaborating with Waymo, providing them with Peterbilt trucks for testing. "We're not involved in their solution, we're not involved in their system, but [we're] learning a lot just by collaborating with them."

One way the company is creating new connections is through its new Silicon Valley Innovation Center. Opened in 2017, the center has a dedicated staff of 12 that reports directly to Quinn, and the main focus is discovering emerging technology and forming partnerships with startups. As of 2018, the team had already conducted more than 300 startup meetings and 50 meetings with venture capital firms.

Quinn says the core team at PACCAR's Bellevue, Wash. headquarters also dedicates time to learning and utilizing various innovation methodologies, such as human-centered design, agile,

Workspace at PACCAR's Silicon Valley Innovation Center.

and lean startup.

We sat down with Quinn at PACCAR's HQ to learn more about the company's innovation focus; what technology his team is pursuing; and how he is defining the role of CTO.

INNOVATION AT PACCAR

Quinn joined PACCAR in 2005 as its Sr. Director of Applications, and quickly became the company's Chief Information Officer in 2008. He also spent a year as General Manager at the company's Peterbilt division before taking on the role of CTO in 2018.

"Traditionally, the commercial vehicle industry and even the automotive industry has not been a huge focus of hype and emerging technologies," says Quinn. "Boy, it is now. It's an exciting time."

In 2018, the trucking industry saw massive growth. According to a PACCAR, freight activity grew 6.6 percent in the United States last year,

which is the highest growth the industry has seen in two decades.

That growth has provided fuel for PACCAR's increased investment in R&D and innovation. The company says it will invest up to $350 million in R&D this year, up from $306 million in 2018. The 2019 investments will go towards "new truck models, integrated powertrains including zero-emission electrification and hydrogen fuel cell technologies, enhanced aerodynamic truck designs, advanced driver assistance systems and truck connectivity, and expanded manufacturing and parts distribution facilities," George West, Vice President of PACCAR, said in a press release.

"Our focus has always been on quality, technology, and innovation," says Quinn. "Of course, innovation has become this wonderful buzzword in the last 10 to 20 years. Innovation to us means that we make the necessary changes to keep our business viable at all times, create new technologies, and use innovation to make the highest-quality vehicles in the industry."

When it comes to "next-gen" vehicles, there are small product planning teams in each of the three truck divisions at PACCAR. These teams are studying the marketplace to identify what new technologies and ideas should be built into PACCAR's trucks in the future. Quinn says that individuals from corporate are also often involved in helping prototype or implement these ideas.

And Quinn says that the company is very strategic about its investments and expansion opportunities.

"We're a 113-year-old company," says Quinn. "We're pretty careful about investing in new businesses and expanding in new regions in the world. We'll be diligent and get into the details about whether or not we think we can do that profitably. Geographic expansion continues to be a focus of ours."

Quinn says that India and China are two lo-

cations where the company hopes to expand. In terms of investing in new businesses, the company's new Silicon Valley Innovation Center aims to help PACCAR better understand the emerging tech worth that may be worth investing in.

GOALS FOR A SILICON VALLEY INNOVATION CENTER

"Startups need to move quickly. They don't have a lot of funds. They don't have a lot time. They need corporates to engage with, to do proof-of-concepts, and to help them validate their solutions," says Quinn.

He points to a map showing the number of automotive offices, labs, and startups in Silicon Valley. In April of 2016, there were only 26 "automotive-affiliated" buildings. Today, there are 114.

"This [increase] wasn't really the reason [we built the innovation center]," says Quinn. "The main reason was because we really wanted to engage at a deeper level with startups. When we envisioned this place in Silicon Valley, we really envisioned it as kind of a lab—a truck lab."

The company selected a 26,000-square-foot facility with 18-foot high ceilings in Sunnyvale, Calif. for its center. The space can accommodate up to five trucks on display, but also includes meeting rooms, offices, and event space. The center is used primarily for meetings with startups focusing on driver assistance systems, artificial intelligence, vehicle connectivity, and augmented reality.

Quinn says that driver assistance and autonomous vehicle testing were two of the main supporting reasons for the lab. He says most companies are working on "level one" solutions like cruise control, or "level two" solutions like steering control. PACCAR is working on higher-level solutions by collaborating with autonomous developers in Silicon Valley.

"We are the truck platform of preference for autonomous development for trucks," says Quinn. "Particularly Peterbilt, but Kenworth as well. It's because we will collaborate with the developers and enable them to use our truck as a platform to develop a solution. It's a little challenging for us because they're startups...but we're doing our best to support them."

When it comes to augmented reality, Quinn says there are plenty of applications for the technology in the trucking industry, especially during product development and design reviews, and in the aftermarket, for owner's manuals and service tools. PACCAR was one of the launch developers for the Microsoft HoloLens, an early AR headset.

The Peterbilt Walmart Advanced Vehicle
Experience, inside PACCAR's Silicon Val-
ley Innovation Center.

According to Quinn, a monthly call with the company's "technology board" keeps leaders at headquarters informed about what's happening at the innovation center.

The lean startup methodology is central to the way PACCAR explores new possibilities, Quinn says.

"Proof-of-concepts, pilots, and using a lean startup approach—this is something that's been going on within PACCAR a long time," says Quinn. "It's at the core of how we innovate. ... The problem is [that] for any large corporation to fully industrialize and take something to production involves a lot of people and a lot of disciplines. It can get bogged down in the details and take a long time."

To counter that, Quinn says a lot of the company's projects start as nascent ideas or proof-of-concepts. Then, a small team will be formed to develop that idea, carrying it through prototyping and testing.

"You have to fully validate the solution," says Quinn. "The last thing that we want to do is to put out a solution that either doesn't work, or has a safety issue."

One area where PACCAR is utilizing the lean startup approach is in their work on the electrification and hybridization of vehicles. Because the market and technology associated with electric vehicles is evolving rapidly (with competitors like Tesla, Daimler, and Nikola already announcing fully-electric semis), PACCAR is avoiding the "five-year product development project," and is instead running pilot programs within each of its divisions.

PACCAR's DAF team in Europe is working on hybrids and battery-powered vehicles, while the Kenworth team is working on fuel cells as an alternative power source, as well as systems that would extend the range of a truck. Peterbilt is working exclusively on electric trucks. In the last year-and-a-half, 30 demonstrator vehicles have been built across the

"Make something happen every day. Be a little patient with yourself and with the company, too."

KYLE QUINN, PACCAR CHIEF TECHNOLOGY OFFICER

divisions. The teams working on these solutions in each division have less than 20 people on them.

Quinn highlighted two challenges these teams are working to overcome: expanding the company's knowledge-base from diesel to electric engines, and better understanding the supply chain for electric vehicle development.

"The majority of our product teams are very, very knowledgeable about diesel vehicles," says Quinn. "We're learning about electric vehicles. We're all engineers...but electric commercial vehicles on the scale of these powertrains are pretty new. The experimentation is really important."

At the 2019 Consumer Electronics Show in January, PACCAR exhibited three zero emission vehicles: a battery-electric Peterbilt Model 579EV; a battery-electric Peterbilt Model 220EV; and a hydrogen fuel cell electric Kenworth T680, which was developed in collaboration with Toyota.

WHAT MAKES DRIVERS HAPPY?

One of the big challenges facing the trucking industry is a massive driver shortage. In 2018, the American Trucking Association reported that 51,000 more drivers were needed to meet increased delivery demands. And despite increasing wages, drivers are still hard to come by, likely due to perceptions surrounding the job's lifestyle.

PACCAR aims to change that perception, and

The 19 DAF 90 Year Anniversary Edition.

In interviews with female drivers, his team identified vehicle security and leaving the truck at night as a major concerns. To address these concerns, PACCAR integrated a panic button that can be triggered from the bed that would honk the horn and flash the lights to scare away intruders.

"One of the things we have also learned is that your vehicles are much more desired by fleets who buy them if the drivers really prefer your vehicle," says Quinn. "We constantly are not only trying to meet design objectives that make us desirable for fleets, like reliability and fuel economy. ... We also very much want to be the driver-preferred truck."

CHALLENGES OF A NEW C-SUITE ROLE

With both PACCAR and the trucking industry as a whole experiencing the strains of growth, the company realized it needed one of its senior leaders to be focused on trends and new technologies. The company tapped Quinn, who became PACCAR's first CTO in April 2018.

"It's just like being elected to a political office or taking a new job of any kind," Quinn says. "You have to figure out, 'What are the goals that I need to achieve?'"

Quinn said he put his goals into two categories: a six-month horizon and a one-year horizon. These goals were based on conversations he had with individuals and teams throughout the organization.

"The second piece of it is the listening piece," says Quinn, "listening to what a lot of people think the CTO should do. On one side, it's a bit of a burden because there's a lot [on that list]. We've needed a CTO for a long time, is what I've learned, [so] we have a lot of things that need to be done."

Several teams throughout the organization report to Quinn, including the Silicon Valley Innovation Center, the IT team, and the Powertrain team. As CTO, Quinn says he needs to own the innovation domain for the company, and one of his major initiatives is on building and enhancing a culture of innovation at PACCAR.

Quinn served up this advice for other new technology and innovation leaders in companies that have just created the role: "Don't let yourself feel overwhelmed," he says. "It took a while to create the position, and so you can't solve everything in one day. [You need] perseverance and patience. Don't give up. Make something happen every day. Be a little patient with yourself and with the company, too." ⬢

has been using human-centered design to better understand what makes truck drivers happy.

"We sent teams to the Stanford Design School and also did some training with IDEO, then started to put it to work," says Quinn. "It had some pretty big influences on us, particularly about creature comforts for drivers. We learned a great deal in that program related to how to apply human-centered design."

One solution that emerged from the human-centered design approach is the Peterbilt 579 UltraLoft Sleeper, which began production in 2018.

"Our engineering team did a fantastic job at thinking about all the features and comforts that a driver or team of drivers really want to have in the vehicle," says Quinn. "One of the things that we learned in our human-centered design efforts for the Sleeper is that a great number of truck drivers today use a CPAP, [a medical device that] helps you breathe if you have sleep apnea. If there's two drivers, when they pull off to rest, they [may] need to operate two CPAPs in the truck, so there needs to be space, power facilities, and all those kind of things to support that. We designed the shelving around the beds and the electrical connections specifically to support that."

Quinn said his team also employed human-centered design to develop features specifically with female drivers in mind. According to the Bureau of Labor Statistics, 6.6 percent of truck drivers in 2018 were female.

The Art of Growth

Procter & Gamble's R&D leader talks about finding new sources of growth in an era of disruption

By Scott Kirsner

ILLUSTRATIONS
BY ALISON SEIFFER

It's

nearly impossible to go through your daily routine without encountering a Procter & Gamble product, from Gillette to Pantene to Crest to Bounty to Tide.

But like many big, established companies—P&G was founded in 1837—it is increasingly competing against newly-launched brands and innovative business models. (Think Jessica Alba's The Honest Company and Dollar Shave Club.) P&G is also grappling with a changing retail environment, and a customer that discovers and buys products through digital channels like YouTube and Instagram.

That creates plenty of challenges for Kathy Fish, the Chief Research, Development, and Innovation Officer at the $67 billion consumer packaged goods firm. In a recent quarterly earnings release, revenue growth was 1 percent (below the 1.7 percent analysts expected), and the company told Wall Street it expected growth to be in the flat to one percent range for the 2019 fiscal year.

"Clearly, we're not growing as fast as we need to," Fish said in an interview with *Innovation Leader*. She discussed how the company is working to change that dynamic, with initiatives like GrowthWorks—focused on diffusing the lean startup approach throughout the company—as well as startup partnerships and spin-outs of promising technology platforms.

"We are trying to drive the concept of ambidextrous leadership, recognizing that when you're running the core big business, it requires a level of operational discipline," Fish says. "When you're creating the future, you don't know where you're going. It has to be a culture of experimentation."

An edited transcript of our conversation is below.

Q **HOW IS YOUR** job focused these days, and how are you working with other parts of the company to spur innovation?

My job is primarily focused on the product and package experiences, but it's so intertwined with the entire system that we are coming together in many ways. We're finding that we're much better when we work the consumer, the technology, and the business model together from the beginning and learn and pivot as we're going...

FOSTERING LEAN INNOVATION WITH GROWTHWORKS

Q **IF YOU THINK** about the last five years, are there some new ways that you're trying to get people in those different groups working together, and get past the traditional boundaries of, "Marketing does this, and Packaging does this?"

We have embraced bringing lean innovation in. We have a program internally called GrowthWorks. [That is a small, multi-functional group that supports our] business units as they run their experiments. Marc Pritchard, the Chief Brand Officer, and I sponsor it together. We have brand, we have HR, we have finance, we have design. We're bringing product supply in as we speak. As we're working lean innovation, it is all about being multifunction from the beginning.

We call our internal program GrowthWorks, because we spent some time [with GE]. They called theirs FastWorks. ... We felt like speed of learning was important to us, but growth was what we were trying to drive. We are creating our own program, but we're leveraging a lot of experts externally as well.

I am leading the GrowthWorks efforts for the company, which is changing our approach to innovation, to not just start with product and then figure out how to commercialize it, but start from the beginning with consumer, product, and business model and multifunctionally iterate as we do that.

We bring [lean startup guru] Eric Ries in regularly. We also have been working with [the New York consulting firm] Bionic so we can leverage successful entrepreneurs and think about how we can do things differently when we're trying to create new sources of growth.

... We are trying to drive the concept of ambidextrous leadership, recognizing that when you're running the core big business, it requires a level of operational discipline. You can't afford big mistakes. You can afford

Kathy Fish

teams can have access to funding and access to leadership when they need it.

The growth board decides whether the quality of learning is good enough to get the next level of funding, and helps guide and counsel them. Then, they're working together to put a future-focused portfolio of experiments together in each business unit. [We want to be] looking at where the consumer's going, where technology's going, what are our biggest potential growth opportunities or potential disruptions—if we don't address them. What are the portfolio of experiments that we should be running to go forward?

Q ONE QUESTION ABOUT the growth board: Is that something that exists in each business unit or is that a central thing?

We have growth boards in each business unit, and then we have an enterprise growth board that is made up of all of our function leaders, plus our CEO. I'm the key driver for [that one], but [it is] led by our CEO.

We are taking on enterprise challenges, things that go across the business units, as well as looking at whether our total portfolio of experiments in the business units is going to be sufficient to meet our new growth goals.

ELEVATING P&G'S OPEN INNOVATION GAME

Q DO YOU THINK in terms of the R&D organization, is there more openness now than there was five or 10 years ago, in terms of willingness and mechanisms to say, "Hey, we know how to collaborate better with universities, with startups. We know how to run external challenges, the type where you're putting a problem out there and [asking] who can solve it?"

We've been on the leading edge on [what we call] "connect and develop" for a long time. ... We made a big deal about that in the 2000s, but I would say we have elevated our approach, first by being more strategic, and then second by better leveraging the startup community.

The third thing I would say is, we are also doing some external value creation [with] our technology. That's a new arm, but let me talk about all three of those. Virtually every

small mistakes, but not big mistakes.

[In contrast,] when you're creating the future, you don't know where you're going. It has to be a culture of experimentation. There has to be a lot of debate, and you need to go off and learn fast and continue to work. That is what we're working to drive.

Q DID I MISUNDERSTAND you when you said there's a team that supports that cross-functional lean innovation work?

Yes, we have a dedicated multifunction team centrally. But rather than a mandated top-down program, we've decided to let each business unit define their own program.

First of all, it starts with a more entrepreneurial approach, so it's about assigning small, multifunctional teams to the key projects—ideally dedicated teams.

We're trying to get them all dedicated. That is one of our biggest challenges. ... Then, the second piece of that is having a growth board, which is the structure so that these

single big project that we [work on] has multiple external partners.

[One example] was the creation of Olay Skin Advisor, where we used Iconmobile to help us design the initial prototype, and then we partnered with Nara Logics, [a startup with] artificial intelligence capabilities.

They [created] a diagnostic that's truly unique in the beauty care space and really stands out [in terms of] getting people to the right product for their own unique needs.

We've also gotten much more intentional about leveraging the startup community across a full range of our innovation needs, including new business models. [Through partners,] we have access today to 275,000 startup companies and 10 major hubs. ... We are running all sorts of experiments, including finding small startup companies and partnering with them to incubate their brands in market.

AN UPDATE ON P&G'S CLAY STREET STUDIO

Q ONE THING WE'VE written about in the past is the Clay Street Studio in Cincinnati. How does that tie into all this? My sense was that [the team there was doing] skills training for P&G folks.

Clay Street was how we started with design thinking. What we've learned is we need to integrate design thinking into everything that we do, versus sending some people off to Clay Street for a special session.

We've moved some of the people from Clay Street into our GrowthWorks team, and they're being hugely effective at helping us with training and coaching on how to step back and think about the problem bigger... [and] bring in inspiration from other industries to help us think about the problem differently.

We've integrated that into everything we do, [but Clay Street no longer operates a separate space of its own].

MEASURING R&D PRODUCTIVITY

Q WHEN YOU LOOK at the rankings of "most innovative companies," it's still based on number of patents, which seems to me like a really silly metric.

It's a really poor measure. ... You can have a lot of patents that are just not that interesting and never leveraged.

Q ARE THERE METRICS that you, as the head of R&D, the head of innovation, think are emerging as new metrics that are important to know about?

We're experimenting right now with three different metrics. One is, "How often are your patents cited?" and, "Are people trying to copy it?" That means it's meaningful.

For example, for us, we are now the market leader in baby care pull-up pants, but for 25 years, we struggled because Kimberly-Clark had such a wide moat of patents in that space. We had a hard time innovating without infringing on their patents. We would be citing what they were doing often. We would be trying to work around that.

The other two metrics are how many of our patents are being used in our marketed products, and the extent to which our patents give us competitive advantage.

SETTING UP SOME NEW PLATFORMS AS SEPARATE VENTURES

Q YOU TALKED BEFORE about external value creation. What does that mean?

Increasingly, we're embracing external value creation with our technologies. That's a major shift for us—not that we've never done it—but we're being very intentional. We're doing it for a couple of reasons.

First of all, the investment and the breakthrough platforms that are required for irresistible superiority are expensive. It takes a lot of R&D, a lot of industrialization. They're also high risk. When you start up a new platform, you're learning a lot about the new platform. You can have challenges.

We have decided that some of our technologies are much broader than just P&G. You can leverage them to create funding to reinvest in R&D. We can also leverage it to derisk our scale-up.

We have a couple of examples. ... The first one we did was a company called PureCycle. The technology is to decontaminate recycled polypropylene so that it performs virtually like a virgin material.

If you think about the plastic industry today, you can recycle plastics that have had color or other contaminants [and use them] for park benches or things that are gray or

black. [With the PureCycle approach,] you can reuse it like a virgin material. ... It starts to contribute to this circular economy—recycle, reuse. It works amazingly well.

We realized quickly that that was bigger than just P&G, and that we would struggle to fully industrialize [the product]. We reached out to a company called Innventure, a startup that helps commercialize disruptive technologies. They are building the first pilot plant. They are going to industrialize it for us. It's going to give us a revenue stream for an extended period of time that we can project into innovation.

Our second field that we signed with them is for a package that we're calling Air Assist. [The technology has since been renamed AeroFlexx.] We take a plastic film and structure it with air so it can stand up like a bottle, but it uses 50 percent less plastic.

More importantly, it doesn't require bubble wrap or anything if you ship it through e-commerce. ... It's really quite a breakthrough from a sustainability standpoint.

... If Innventure helps us make it an industry play, then we'll able to go faster. It will be able to have more impact. We'll have a revenue stream. All those things are good.

'WE'RE NOT GROWING AS FAST AS WE NEED TO'

Q | WHAT ABOUT THE **things that haven't worked?**

On the things that haven't worked—clearly, we're not growing as fast as we need to.

Innovation needs to be broader than products and package. It needs to be about the entire consumer experience, and we need to be addressing it more holistically from the beginning.

Our GrowthWorks program is only two-and-a-half-years-old. That's what we've put in place to address that reality, because some of the misses that we've had are against a broader definition of innovation.

Q | WHAT DO YOU **mean? Misses that are things that are undermarketed, or things that are targeted at the wrong consumer set?**

Dollar Shave Club—it's a different business model. That would be a miss. ... The consumer wanted that, and we didn't give it to them. We need to be sure that we are giving the consumer what they want when they want it. We have to be...figuring out how to make it a business model that makes sense for us too. That is part of the challenge.

DON'T STOMP ON THE SEEDS OF THE FUTURE

Q | ONE LAST THING **to touch on**, **anytime you mention a startup like Dollar Shave Club**, **is that that stuff looks really small and insignificant at first.**

It feels like a big part of your job must be like, "**Hey**, **we can't miss the signals of this disruptive stuff.**"

That's exactly right. That is what the Growth-Works portfolio is all about. It's like, "Where is the consumer going? Where is technology going?" Therefore, "What are the spaces where we need to be innovating? How do we go plant a lot of experiments to see where the consumer gets excited?"

Hopefully, we keep pivoting until we get to something that the consumer loves, and has a business model that makes sense, and we go from there.

These are the seeds of growth for the future. ... We look for 10 to 20 percent of our growth to come from those.

We are asking our businesses to declare what they need to come from new growth and to be very intentional about planting these seeds.

It's really easy to put your head down and deal with the issues of today, and you have to do that. But you also have to put some resources [into] planting the seeds for the future.

... We are starting to see some scale. Pampers Pure [diapers and wipes made from sustainable materials, without fragrances] is a great example of one that scaled recently, and it's off to a great start.

That is what we're committed to making happen here. It takes time for those seeds to show up as driving the top line in a major way, but they will.

Q | THAT METAPHOR IS **great. Once a seed starts sprouting, you don't want to stomp on that just because it's small and it's not the oak tree just yet.**

Our fastest billion-dollar brand took 10 years, and many of them take 15 plus. Really, good things often start small. ◆

The second-generation Freestyle beverage dispenser was unveiled in 2018; more than 52,000 of the original model, launched in 2010, are already in market.

Coke,
Customized

How a team of Coca-Cola
engineers created
the soda fountain of
the future...then did
it again

By **Scott Kirsner**

PHOTOGRAPHS BY TIM REDMAN

Coca-Cola's headquarters building rises 29 stories above Atlanta.

But the team working on a new kind of soda dispenser in 2007 was stashed away in the basement. Two levels of passcodes and one very stringent non-disclosure agreement were required to enter the lab. The endeavor, code-named "Project JET," was kept separate from other R&D initiatives.

"Leadership set up a skunkworks team that was incredibly secretive and given resources, but kept very close to the vest," says Jim Sanders, Vice President of Freestyle Business Development and Fleet Performance. Because the workspace was located underground, "the initial engineers called it the dungeon," Sanders says.

The Project JET team was trying to tackle what Coca-Cola viewed as a big problem: Consumers wanted more choice. While Coca-Cola was addressing that by offering an array of flavors packaged in bottles and cans—like cranberry Sprite or Barq's French vanilla cream soda—the self-serve fountain you'd encounter in a fast food restaurant was stuck in the 1960s, Sanders says. "At fountains, there were just six or eight choices, and it was really limited on diet or low calorie options," he says. "The idea of more choice was the heart and soul of the project."

Designing a new kind of fountain might also give Coca-Cola a competitive edge. Even though the company already commanded greater than 70 percent market share at fountain-based locations in the US, "every time we developed something new, the other guys in blue were quick to follow it on," Sanders says, referring to Pepsi. Part of the problem was that both companies relied heavily on outside suppliers for technology.

This time, Coca-Cola opted to try to build something on its own, rather than just buy from third-parties, so that it could have "a unique solution that [restaurant owners] couldn't get from the other guys," Sanders says.

There are now about 52,000 of the Project JET machines out in the world, and odds are good you've used one, maybe at a Firehouse Subs or Five Guys. (It's now known as Coca-Cola Freestyle.) But getting there wasn't simple.

REIMAGINING THE SODA FOUNTAIN

The common soda dispenser—push the lever and fill a cup—blends carbon dioxide, water, and concentrated syrup. But the flavor balance can be imprecise, as valve settings drift over time. And if the company wants to launch a new flavor, it faces a tough decision. Which existing flavor has to go?

The Project JET team, about a dozen engineers and managers, borrowed an approach called micro-dosing from the medical industry—a way to precisely control how fluids were mixed. What if you could do that same thing with the flavors of a soft drink?

"We initially thought we were going to use the traditional beverage suppliers to this industry," Sanders says. "But in an effort to keep the intellectual property and the ideas to ourselves, we did a lot of the engineering, and we used a lot of new approaches to designing and manufacturing the equipment."

Funding, and the approval to create a separate innovation team that was fully resourced with dedicated people, came from then-CEO Neville Isdell, Sanders says, as well as the company's head of R&D.

The typical model for Coca-Cola was to give suppliers a design brief, and let them develop designs for the company to evaluate, Sanders says. "Then, we'd forecast how many we might buy," he explains. "It was an arm's-length...relationship."

But Coca-Cola wanted to own the product—from the fluidic system that would allow precise flavor control to the refrigeration technology to the software. And, says Sanders, after a few false starts, the Project JET team realized that the company's existing supplier base didn't have sufficient "capability to work in some of those areas," he says.

The Project JET team didn't do everything itself, however: It found an outside partner that had worked on micro-dosing before, New Hampshire-based DEKA Research and Development, run by inventor Dean Kamen. (Kamen's first successful product, invented in the 1970s, was a medical device that delivered precise doses of insulin for diabetics.) A Seattle company, Bsquare, brought expertise in internet-linked products.

The system Coca-Cola developed invited customers to use a touchscreen to select a beverage.

Then, as carbonated water is shooting from a nozzle into the customer's cup, "the drink is being mixed in mid-air," Sanders explains. "The ingredients are being fired from about 36 different pumps, which gave you an absolutely fresh and perfect drink every time."

Even so, questions always surrounded the secretive project. Executives wanted to understand, Sanders recalls, "Is there a business case here? Do we want to invest at the next level?"

Before the project had been launched, one of its original champions, Isdell, retired, and a new CEO, Muhtar Kent, took over. "One of Muhtar Kent's first inputs to the project when he came on as CEO was that he brought in Pinanfarina [the Italian car design studio] and they helped us with the external look of the device," Sanders says.

By the end of 2009, the company had given Project JET a real name—Coca-Cola Freestyle—and green-lit the plans to commercialize it. Freestyle would be able to serve up about 100 different beverage flavors.

THE ALPHA TEST

But first, the company needed to test the device in a real restaurant. It chose a suburban Atlanta burrito shop, Willy's Mexicana Grill, for the alpha test of the Freestyle machine, which had been hand-built by the engineering team.

Why Willy's? "We knew the owner [Willy Bitter] very well," Sanders says. "It was close to headquarters. And they allowed us to have three or four engineers in there constantly" to babysit the prototype machine. The team also shot videos of how customers interacted with Freestyle.

"We're watching not just how consumers react," explains Scott Harrison, Vice President of Platform Leadership at Coca-Cola, "but we're trying to find the bugs we didn't catch in the lab. ... We can go back and look at the film, see the use case, and fix it."

Another reason for choosing Willy's as a test site was its size—at the time, Willy's operated just a handful of locations around Atlanta. "Consumers could've rejected Freestyle," Sand-
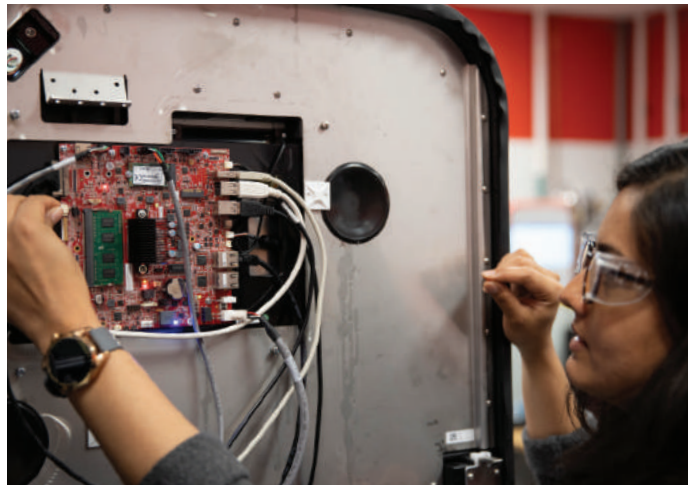
Making the Case for an Upgrade

Scott Harrison, Vice President for Platform Leadership at Coca-Cola, explains how his team made the case for developing an upgraded version of the Freestyle dispenser.

1. We needed to update the technology.

2. Clearly, we have interest in the product from the marketplace.

3. We view Freestyle as a marketing asset. So [adding] a bigger screen, and a more contemporary look and feel was important.

4. We [provide] all the service for Freestyle, and after collecting years of service data, the math and payback around creating more reliable parts, and [enabling] more intuitive change-outs made the payback pretty compelling.

5. A new operating system allowed us to be more flexible, nimble, and lean in terms of how we build software for Freestyle.

ers says. "We might've pulled it out. And you wouldn't want to disappoint one of your large national customers" if that happened.

And there were definitely the sort of snafus one would expect from what Sanders dubs an "alpha test." Pininfarina had designed a swoopy, elegant lever for dispensing ice into the cup. But if you pulled your cup away too fast, and the machine emitted a few extra ice cubes, the lever would essentially punt them onto the floor of the restaurant. The team realized that "we've got to go back and get much more of an industrial, usable device, instead of this thing that was more about looks," Sanders says. It was also too complicated to reboot the Freestyle, something that restaurant operators would need to be able to do on their own, especially if the machine was having issues connecting to the wireless network.

But consumers who tried Freestyle at Willy's "fell in love with it," Sanders says.

Not long after, the company created a Facebook page—one of Coca-Cola's first—to see what consumers were saying about Freestyle. "One thing we'd see on that early Facebook page was, 'Bring Freestyle to Peoria,' or wherever the person was from," Sanders says. "And you also had people telling each other how to mix different brands to get something that tastes like an ice cream treat or a certain candy. There was that notion of the consumer owning the experience."

As Coca-Cola continued to shepherd Freestyle toward the market, it needed to make several big changes. First, the skunkworks group had to move out of R&D—and the basement—and into a more commercially-oriented part of the company, Coca-Cola's FoodService and On-Premise division.

The company would rely on contract manufacturing firms to build the machines—the same way Apple builds iPhones. A new supply chain had to be designed, and Freestyle required different training for service technicians. And the machine "needed quite a lot of maintenance in the early days," says Thomas Stubbs, Vice President of Engineering and Innovation for Freestyle.

Coca-Cola also planned to price the Freestyle at a premium to the traditional fountain dispenser. And it wasn't exactly selling Freestyle

machines to customers—it was renting them. "The idea of a program fee is one of the other big, courageous steps we took," Sanders says. "The company made the decision that we would own all of these devices," and the customer would pay a monthly program fee ranging from $160 to $300 a month, depending on the size of the machine. That fee includes use of the equipment, the software, installation, and any service; it doesn't include the cost of flavor cartridges that go into the machine to enable it to produce beverages.

The pitch was, according to Sanders: "[I]f you're looking for low price, use our traditional fountain. But if you want to innovate and grow your beverage business with young consumers, [Freestyle is] a premium option." The company hasn't disclosed how much it spent on the Freestyle project, but it spent $100 million upgrading an Atlanta plant so that it could produce concentrated ingredients for Freestyle cartridges.

Taming a complicated new technology while deploying a new business model could be headache-inducing. "We would tell each other, 'If you ever have a day when you feel this is too difficult, go out and just watch the consumer in restaurants that have [Freestyle],'" Sanders says. "They'd be giggling, and sharing with each other how to use it. The engineers would have to rub that into their wounds like a salve. There were plenty of technical hurdles we had to go through... but we knew we were onto something that would change the game."

Once Freestyle machines started showing up in restaurants around the country, in mid-2010, the wounds began to heal. "We have seen it, the promised land," wrote Elina Shatkin in *LA Weekly*. "The soda dispenser of the future." The Disney Food Blog dubbed it "the coolest Coke machine you've ever seen." *Esquire* doled out negative reviews to nine of the more exotic flavors (Powerade ION4 Lemon "tastes like the kind of lemonade you can make at home if all you have is a lot of water and a lemon rind"), but reluctantly admitted that Sprite with grape was pretty good. The company's Facebook

> "We would tell each other, 'If you ever have a day when you feel this is too difficult, go out and just watch the consumer in restaurants that have [Freestyle]. They'd be giggling, and sharing with each other how to use it."

JIM SANDERS, VICE PRESIDENT OF FREESTYLE BUSINESS DEVELOPMENT AND FLEET PERFORMANCE

page quickly amassed 8,000 fans. Pepsi—those "guys in blue"—raced to catch up, eventually launching a rival machine called Pepsi Spire in 2014.

Over the next nine years, Coca-Cola deployed more than 52,000 Freestyles to customers like Qdoba, Wendy's, Burger King, Subway, and AMC Theatres. (While beverage consumption at Freestyle restaurants tends to increase about 8 percent, according to Coca-Cola, calories-per-serving goes down, as more consumers choose low-calorie or no calorie options.) It was granted more than 80 patents for the technology inside.

'HOW DO WE SCALE THIS THING?'

After the Freestyle had been in market for several years, the team overseeing it realized the need to create Freestyle 2.0. The first device "was about discovery, and proving the model," says Scott Harrison, Vice President of Platform Leadership at Coca-Cola. "Now, it's about how

do we really scale this thing?"

Stubbs says that there were several components to the business case. The first was security. "We needed to update our software and the way we connect to the machines to keep the bad guys at bay," he says. "These are wirelessly-connected devices with screens, and our first goal is to not repeat the mistakes of some companies that have been hacked." The second was about creating a single Freestyle operating system for the entire "fleet" of machines, rather than running different software on the different models of machines.

The third component was maintenance. "We were aiming to be about 90 to 95 percent more efficient than we were," Stubbs says. "We needed to make [maintaining the machines, including cleaning them and swapping out flavor cartridges] simpler and more efficient." The team also wanted to enable Freestyle to handle a wider range of beverages, including juices and coffees.

And the final component of the business case was the ability to innovate with customers, creating specific beverages exclusive to their chains.

Rather than trying to add features or enhance the first version of Freestyle, they redesigned it

The second-generation Freestyle dispenser was initially tested in a Marietta, Georgia Firehouse Subs location. It serves up a Firehouse signature beverage: cherry lime-aid.

from the ground up. "It was just more efficient, better quality, and less expensive to go with a fundamentally new design," says Stubbs.

While the original machine ran on Windows, the new one relies on a Linux operating system that supports tech standards like Java and HTML 5. That "allows us to more rapidly innovate," Stubbs explains, "and it means that other teams [both within Coca-Cola and at its restaurant customers] can build apps for the machine." The touchscreen display has much higher resolution and can play videos. The "push to pour" button relies on haptic feedback to vibrate a bit, so the consumer knows the beverage is coming.

And, Stubbs adds, "We filled it with electronics that we know we're going to need in the future, like bluetooth and RFID radios, and we made it more modular for hardware and software expansion in the future." The Freestyle's wireless connection allows for its software to be regularly updated over the air—not unlike a Tesla sedan.

Halfway through 2018, the Freestyle team decided to run an alpha test of the redesigned machine—known internally as the 9100. This time, they chose a Firehouse Subs location in Marietta, Georgia. Firehouse had been one of the first Freestyle customers to roll out the machine to all of its locations in 2011. Firehouse was "eager to be first-to-market with the latest and greatest," Sanders says.

This time around, the alpha test was different.

"We just needed a close partner, and someone who wouldn't mind having three engineers in the restaurant constantly," Sanders says, and executives dropping by to have a look.

But while the engineers were busy keeping the Freestyle up-and-running during the original Willy's test, "the second time around, the engineers were bored," says Stubbs. Sanders adds, "We had to make sure the location had wifi. They weren't having to deal with the equipment constantly, so they needed to be able to work on their laptops."

After the alpha test, Coca-Cola typically goes to a larger rollout—anywhere from 20 to 50 locations "where we're trying to simulate 'real life,'" Harrison says. "We let the typical [restaurant and Coca-Cola] operations take over. We're testing the supply chain, the install processes, the training for the crew. Then, fast-forward a few more months, and we start to build inventory and manufacture" the machines, and install them in restaurants around the country.

One important test for the new machines: How should Coca-Cola use the screen's new video capacity? "Consumers have told us, 'I'm there to get a drink—don't show me a com-

Freestylers (from left) Chris Dennis, Keith Gibson, Scott Seccuro, Lindsey Bozung, Thomas Stubbs, Brian Barrett, Chris Hellmann, Kristen Shappert, Dave Harvey, Scott Harrison, Eric Lewis, Jim Sanders, and Roy Francois.

mercial,'" Harrison says. "When they're up in front of it, they want to discover something new, or find something fast. When it's not pouring a drink, that's when the video might show up. We're figuring out [video] as we go."

The Version 2.0 of Freestyle was unveiled in May 2018 at the National Restaurant Association Show in Chicago.

It has an array of new features, like tracking usage patterns on the machine so that a restaurant manager can better predict when a flavor cartridge will need to be replaced. The original model would report on what percentage of a cartridge was remaining. But "now we can predict that you've got ten hours [of use left], or two hours," Harrison says. "It makes them more efficient and effective in how they maintain the machine." And the dashboard of information about the Freestyle 2.0 can be accessed using a smartphone, tablet, or PC.

Data about how consumers in various geographies use the Freestyle machines also plays a role in how Coca-Cola makes marketing and distribution decisions. "Last summer, the Sprite team used Freestyle consumption data to understand that Sprite Cherry was a fan favorite," Harrison says. "So they developed that into a ready-to-drink version you could buy at retail."

While the first model of Freestyle offered 106 different flavor choices, both that model and Version 2.0 can now serve up about 200.

Consumers can also craft their own custom beverage and store it in the Coca-Cola mobile app; then, on a future visit to that location (or any other Freestyle machine), they can "call up" the same recipe using their phone.

And Coca-Cola has been working with restaurant chains to add their signature drinks to the Freestyle. At Firehouse Subs, that means Cherry Lime-Ade. "They were hand-making it before they had [it on the Freestyle]," says Sanders.

The Freestyle team was at the massive South by Southwest festival in Austin earlier this year, showing off the new machine and offering samples at a park just outside the convention

"Consumers have told us, 'I'm there to get a drink—don't show me a commercial'. When they're up in front of it, they want to discover something new, or find something fast."

SCOTT HARRISON, COCA-COLA'S VICE PRESIDENT
OF PLATFORM LEADERSHIP

center. As of May 2019, there are about 525 of the Version 2.0 Freestyles out in the wild.

The team has also been collaborating with Coca-Cola's Powerade brand to use the machine to create customized drinks for individual athletes "with the electrolytes you need," says Harrison. "We're testing that with Louisiana State University's football programs."

"One of our big lessons learned is that you can't wait eight years to keep developing and investing in a technology," says Harrison. "So we're working on getting to shorter cycles, which will feel more like incremental innovation. We're thinking about wearables, and facial recognition, and how those [might relate to the Freestyle]. Is it relevant to us and our consumers?"

Harrison says that 52,000 Freestyle machines served up about six billion beverages last year: "That's a material chunk of our food service business, and it's growing each and every night." Freestyle General Manager Chris Hellmann said in mid-2018 that Freestyle had grown into a billion-dollar business for the company.

That makes it one of those rare skunkworks innovation projects that began in the basement, survived three different CEO switches, and eventually had an impact on a mass scale. ◉

The original Freestyle dispenser served up 106 different flavor choices; the current model offers about 200.

CHICK-FIL-A's

Chick-fil-A's Hatch is the hub
for innovation across the company.
The space has different rooms
dedicated to each step in the
design thinking process.

INNOVATION COOP

The Atlanta fast food chain is protoyping the future of fast-food

By Kaitlin Milliken

A

Across the street from the headquarters campus of Chick-fil-A is an unmarked industrial building. Deceptively ordinary on the outside, inside lies an innovation paradise with enough space to prototype full-scale restaurants. Spread throughout the spacious warehouse are different rooms dedicated to defining problems and learning different ideation techniques.

There's also a full-sized Airstream trailer, and not far away hangs a large cardboard airplane that reads "Embrace Risk." A toy cow, holding an "Eat Mor Chikin" sign, parachutes into the unknown.

Chick-fil-A customers are certainly heeding the mascot's advice. The fast-food chain has become famous for its chicken sandwiches, waffle fries, and beloved secret sauce. And the popularity of their products continue to grow.

The privately-held company's sales leapt by more than 13 percent in 2018, according to the restaurant industry consulting company Technomic, surpassing $10 billion. That gives it more revenue than Wendy's and Burger King. Technomic also predicts that Chick-fil-A will become the country's third-largest fast-food chain by 2020, after McDonald's and Starbucks. (That's in spite of controversies and boycotts related to non-profit foundations set up by the company and its founder, Truett Cathy, and the groups they support.) But with only 2,300 restaurant locations in the US, the company needs to think about efficiency, volume, and the cus-

tomer experience to continue growing.

"How do we continue to grow at such a positive rate when our processes and our physical restaurants have maxed capacity?" asks Michael McCathren, who leads enterprise innovation at Chick-fil-A. "How do we...accommodate the needs of growing and changing consumer behaviors and preferences?"

To come up with answers to those questions, innovators throughout the company gather at Hatch—the hub for innovation at Chick-fil-A. Under one roof, teams from both headquarters and the company's franchise operators design solutions to common problems in the business.

"We've instilled and imbued the culture that our Chick-fil-A operators feel the freedom to innovate," says Woody Faulk, Vice President of Innovation and New Ventures at Hatch. "That innovation that happens [in restaurants] ultimately finds its way back to Hatch."

According to Faulk, ideas from across the business pass through the same innovation process. Successes then roll out across the chain.

> "We've instilled and imbued the culture that our Chick-fil-A operators feel the freedom to innovate. That innovation that happens [in restaurants] ultimately finds its way back to Hatch."
>
> WOODY FAULK (OPPOSITE), VICE PRESIDENT OF INNOVATION AND NEW VENTURES AT CHICK-FIL-A

Innovation Leader interviewed Faulk and McCathren at Hatch in December of 2018. Throughout the conversation, the pair discussed Hatch's innovation process, challenges in the fast-food business, and how they implement innovations with franchisees.

THE HATCH PHILOSOPHY: MORE BUILDING AND LESS MEETING

"Hatch was designed to be a making space—and not a meeting space," McCathren says. "This is where people come to create things, to give shape and form around their ideas."

Carpenters are a common sight at Hatch, carrying tools and building materials as they work on full-scale structures.

In the back of the space, innovators have simulated a kitchen built entirely out of foam-core and wood. One team at Hatch works on finding the optimal layout that will allow employees to serve more customers. They rear-

Beyond The Restaurant

> "Many innovation spaces are almost sacred spaces. You walk in quietly and you see people working. We follow a different strategy. We want paint hitting the floor. We want sawdust and smoke. A little bit of planned chaos, just like in a garage or true studio."
>
> WOODY FAULK

range pieces to see what decreases the time it takes for an order to get out of the kitchen and into the customer's hands. Findings from this prototype have been integrated into Chick-fil-A's first New York City restaurant to help handle higher-than-usual customer traffic.

"Many innovation spaces are almost sacred spaces. You walk in quietly, and you see people working," says Faulk. "We follow a different strategy. We want paint hitting the floor. We want sawdust and smoke. A little bit of planned chaos, just like in a garage or true studio."

Hatch breaks the innovation cycle into the five stages of design thinking: understand, imagine, prototype, validate, and launch. Each phase of the process has a dedicated area in the building.

Teams focus on exploring a problem and refining their ideas during the first two stages. But the most visible part of the space, Faulk says, is dedicated to prototyping.

"We can come and experience the ideas in either small-scale modeling [or] real, live prototypes that we can walk team members through," says McCathren.

According to Faulk, Hatch brings in customers, employees, and restaurant operators to engage with prototypes. These end-users provide instant feedback about what works —

and what can be improved upon.

"We videotape. ... We're in a backroom watching what happens," Faulk says. "We don't want to interfere with the test. [They are] using the prototypes just like they were fully-built, high-resolution final products."

The team then makes adjustments. Ideas often leave the prototyping stage looking different from when they started. "If we enter the prototype stage and then exit the prototype stage and the idea hasn't changed, we probably haven't done a good job of prototyping," McCathren says.

After testing a prototype, the team moves the ideas out of Hatch to validate them in a handful of Chick-fil-A locations.

"It's like a dress rehearsal for launch," McCathren says. "Everything from marketing communication to operations to training, everything is in that validate stage with a small number of restaurants. Then once all that is pretty tight, then we're ready to launch."

Hatch celebrates its wins in the "Launch"

A plane that reads "Embrace Risk" hangs over the prototyping room in Chick-fil-A's Hatch. A toy cow holding an "Eat Mor Chickin" sign parachutes from the plane.

section of the building. Ideas that have rolled out across the chain are displayed in commemorative wood blocks on the wall.

STANDING OUT ON THE FAST-FOOD BUFFET

Competition is fierce in the fast-food space. Chicken—in nugget, wing, and sandwich form—can be found at most chains.

"[One challenge] that the fast-food industry is facing...is that sameness," McCathren says. "How do I stand out and continue to differentiate my brand if the products [from chains] are looking and starting to taste relatively similar?"

Chick-fil-A has hatched innovations that seek to provide that differentiation. The company has created over 40 new menu items, and a test kitchen for new food offerings operates in a building not far from Hatch. Faulk also says that providing increased convenience can help the brand win big.

"We all have busy lives. ... When we can find anything that provides relief in the form of convenience, we will test it and try it," Faulk says. "[I]nstead of people going to the food, we want the food to go to the people—where I want it and when I want it."

In order to keep cars moving seamlessly through the drive-through, one team created

Drive-Through Play. It deploys workers on foot to gather a string of orders from the line of waiting cars, instead of taking orders individually through a speaker.

In the future, fast-food lovers may have their sandwiches brought directly to their door by a Chick-fil-A employee, eliminating the need for third-party delivery services. "You'll know it's a Chick-fil-A person, and you can expect certain levels of service from our delivery," Faulk says.

Hatch also developed Chick-fil-A meal kits. Similar to Blue Apron, the package contains all of the ingredients and instructions needed to prepare pan-roasted chicken in 30 minutes. Customers at select restaurant locations in Atlanta can now try the product.

"Sometimes people are like, 'Well, I really do like Chick-fil-A food, but I don't want Chick-fil-A another time this week. I'd like to have something by Chick-fil-A—but make it different,'" Faulk says. "The key is that you do go by Chick-fil-A to get your meal kits. You're on your way to eat anyway, to grab an immediate meal, but you can go ahead and pick up a meal for lunch or dinner."

Chick-fil-A is the first fast-food restaurant to offer meal kits to its customers.

"We spent a lot of time understanding why people do and do not like meal kits and de-

> "Sometimes the idea may be a great idea, but it's so difficult to execute that there's resistance."
>
> WOODY FAULK

signed what we believe is an elegant solution that makes us unique," Faulk says.

WHICH IDEAS LEAVE THE NEST

When deciding what leaves the nest and shows up in restaurants, Faulk says that projects have to meet three criteria.

"First, it has to make customer sense. Customers embrace [it and] score it high," Faulk says. "Secondly, our Chick-fil-A operators and team members accept it. Sometimes the idea may be a great idea, but it's so difficult to execute that there's resistance. Then third, it needs to achieve a meaningful financial hurdle."

If the project checks all the boxes, Faulk's team decides if the innovation should be rolled out as a national launch, or gradually by market.

However, not every idea makes its way into restaurants. According to Faulk, learning from failure plays an important role at Hatch.

"Just like you have an ROI...there is a return on learning, because you learn [about ways] we could do it differently, or let's not do that

again," Faulk says. "We think they're both important, and we celebrate [both]."

THE FUTURE OF HATCH

The team at Hatch is continually looking for ways to improve its innovation process.

"You're visiting Hatch 2.0 today. We're actually working on Hatch 3.0," Faulk says. "We think it's necessary to innovate innovation... We found [that] when we mix things up, people get re-energized about innovation again."

Changes in the program could involve a greater focus on collaboration.

"One thing we're finding is the more we are able to get outside voices [from different industries involved]...it expedites the solution finding, and it expedites ideas," McCathren says. "Those perspectives that we may not have been looking for five years ago, we're seeking now."

Hatch also engages startups around the US to help explore opportunities or tackle problems, often inviting startup teams into the space. Faulk says he is looking to expand those relationships internationally.

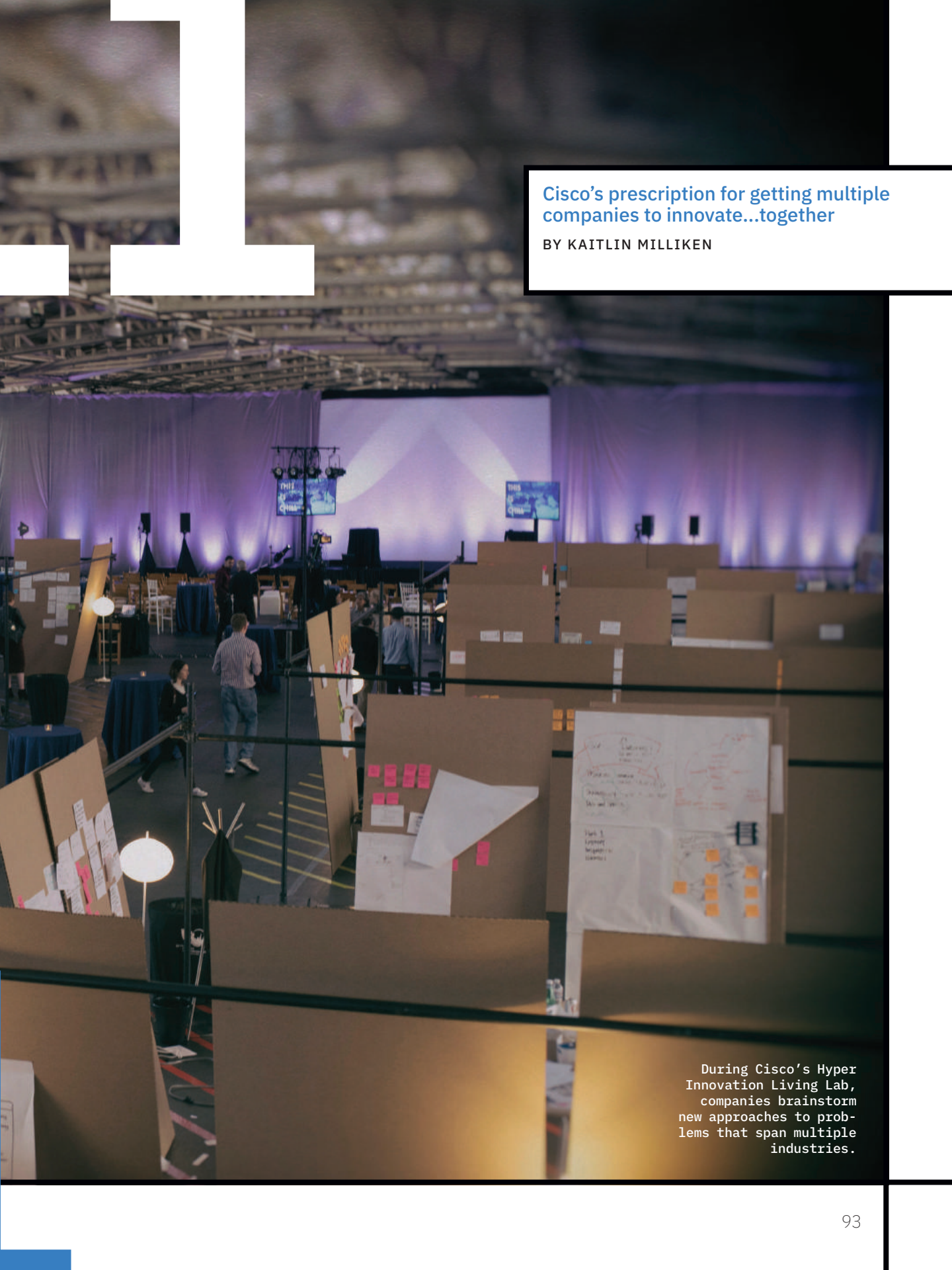"We'll be kicking off a handful of projects [in 2019]," Faulk says, "expanding the same strategy and philosophy, but from a more global perspective." ⬢

Chill

Phil

Cisco's prescription for getting multiple companies to innovate...together

BY KAITLIN MILLIKEN

During Cisco's Hyper Innovation Living Lab, companies brainstorm new approaches to problems that span multiple industries.

SAN FRANCISCO'S PALACE OF FINE ARTS has hosted collaborators from all over the world ever since it was built. In 1915, artists, inventors, and visionaries walked under the Palace's soaring Roman arches during the Panama-Pacific International Exposition, which marked the completion of the Panama Canal, as well as San Francisco's rebound from the devastating earthquake a dozen years earlier.

More than a century later, Cisco's Hyper Innovation Living Lab (CHILL), a 48-hour innovation bootcamp, transformed the Palace of Fine Arts into CHILL's Innovation Hangar. Inside the cavernous space, participants from multiple companies battled the clock to brainstorm, prototype, and present new ideas to users.

By bringing together teams from different companies, CHILL seeks solutions to problems that can only be solved collaboratively. Kate O'Keeffe, founder of CHILL, and her team carefully curate each lab, hand-picking participants from across industries.

"[I]t became clear to me that a lot of corporations needed to stop thinking about innovating independently from each other, and start thinking about how do they innovate as ecosystems," she says. "In order to achieve disruption in some of the opportunity areas, it really wasn't going to be enough for just one company to innovate in isolation."

Participating organizations have included Walgreens, University of California San Francisco, and Citibank. CHILL has an impressive track record. According to Cisco, the Living Labs have so far led to two startups, seven patent applications, and over 20 internal growth initiatives, as of late 2018. During an interview with *Innovation Leader*, O'Keeffe discussed CHILL's founding, the structure of the two-day event, and how CHILL's formula delivers impact.

> "It really wasn't going to be enough for just one company to innovate in isolation."
>
> **KATE O'KEEFFE**, FOUNDER OF CISCO'S HYPER INNOVATION LIVING LAB (CHILL)

Teams workshop new ideas in the CHILL arena.

DESIGNING CHILL

Before founding CHILL, O'Keeffe led Cisco's Services Innovation Center, where she leveraged design thinking and hackathons to field ideas from employees throughout the company.

But while innovation activities generated new ideas, O'Keeffe says that innovators often found themselves endlessly pitching to different senior leaders to win support. After several rounds of "edits,' the final version looked much different than the original idea.

"[I]t was a heartbreaking process. ... [B]y the end of it, the innovator is exhausted...and something gets added to a future list of products, instead of really realizing the [initial] vision of the innovator," O'Keeffe says.

She says that she designed CHILL explicitly to bring senior leadership, innovators, and end-users closer together, by physically placing them in the same room.

"[You want] on-the-spot innovation investors to be really confident that everybody's voice that would be needed to sign off on an innovation, that they're there in the room," O'Keeffe says. "[T]hey're smiling [and] they're clapping."

THE BUILDING BLOCKS OF CHILL

According to O'Keeffe, in the months before CHILL, the team identifies the issue area "where all the players have to grow, have to change, or have to participate differently or more collaboratively." They then begin recruiting a large cohort of organizations that work in that zone.

Participating in CHILL comes with a price: $200,000 in investment from each participating company before the event begins. O'Keeffe says that this payment buys the company equal rights to intellectual property, projects, prototypes, and other outputs created by CHILL.

"To innovate with [Cisco]...through my work, it needs to be peer-to-peer, which means we both have to have dollars on the table," O'Keeffe says. "It's not a truly...shoulder-to-shoulder situation unless we're both prepared to invest."

In order to participate, organizations must also agree to send top decision-makers. "We have a rule within CHILL: If your company needs the blessing of the CFO or the CEO or Bob from Accounting in order to be successful, then the CEO, and the CFO, and Bob from Accounting have to be there," O'Keeffe says.

Participating companies are "aware that our own CEO is likely to be there," she adds. "The minute people start hearing that you have SVPs, and you've got EVPs, and you got your CEO coming, there's a beautiful kind of peer aspect to that."

However, O'Keeffe says bringing together top leaders for weeks on end is "impossible." So CHILL condenses its timeline to 48 hours.

Learning from CHILL

In 2016, Community Health Network, an Indianapolis-based healthcare system, sent its CEO and six team members to CHILL's bootcamp on improving cancer care. Vice President of Innovation Pete Turner said his team wound up incorporating learnings from CHILL into their own innovation program, Community Launchpad. Community Health Network is also an equity shareholder in the startup CircleOf.

Innovation Leader asked Turner to share the biggest takeaways from his CHILL experience.

"[Here's] the two big things we learned. [One was] the...impact of co-creation in healthcare particularly. ... [B]ringing a multitude of people...and companies [together] to solve a common, bleeding-in-the-neck pain was something that we're not historically [used to]. And we walked away from [CHILL] saying, 'Wow, we really need to expand our ability to solve problems within co-creation.'"

"[The second] is the power of the consumer being in the room... [We] really incorporated that at Launchpad, [asking,] 'How can we involve the consumer in the entire process?' It provides insight and a perspective that could never be measured."

"The lab is one thing. Taking the learnings, and ideas, and the possibilities from the lab and converting those...to generate impact... we have no better case study in Community Launchpad than CHILL and CircleOf."

Participants hold paddles to show support for ideas created during the bootcamp. In order to participate in CHILL, partners must send their CEOs and other senior leaders.

THE 48-HOUR DRILL

At the beginning of CHILL, participants meet for dinner, gathering around a table with members of their new team. This initial meeting creates an opportunity to share perspectives and brainstorm ideas.

"[W]e often get really breakthrough moments over dinner," O'Keeffe says. "[A] lot of the teams sort of throw out [initial ideas], and start again at 9 p.m. at the end of the first day."

The next day, they walk into a large arena. Arranged like a donut, build crews sit in the center of the circle with project teams on the outer edge. According to O'Keeffe, two hours in, participants meet their first round of end-users. They then meet with four to five more rounds of end-users throughout the day—reshaping their ideas along the way.

"We're constantly pushing these leaders to stop talking, and start building...and have their concept tested by users," O'Keeffe says.

At the end of the first day, participants brief build teams, who work overnight to create a prototype of their ideas. The process ends on day two at 5:30 p.m., when teams pitch their ideas to a more senior group of stakeholders.

"That's often when a lot of CEOs of the participating organizations arrive to see the pitch-

es," O'Keeffe says. "[And] folks on the teams themselves are so senior that they [often]...have the budget to make the appropriate funding decisions. ... [So] leads on those teams [often say,] 'This is what I'm doing, this is what it's gonna cost me, we start on Monday, off we go.'"

THE POWER OF THE END-USER

According to O'Keeffe, inviting users to give in-person feedback during CHILL helps the teams better understand users' needs.

When CHILL focused on cancer care, O'Keeffe invited patients, doctors, and nurses. When cancer patients arrived at the arena in person, many were unexpectedly accompanied by their at-home caregivers.

"[W]hen you're that sick, there's another person there—a spouse, a partner, a parent—that is part of your day-to-day journey," O'Keeffe

> "We're constantly pushing these leaders to stop talking and start building...and have their concept tested by users."
>
> KATE O'KEEFFE

says. "If we had interviewed those end-users on the phone...we never would have met this entirely [different] group of folks."

As a result, one startup that emerged from the lab focused not only on patients, but also on the caregivers that help them. The digital app, CircleOf, helps cancer patients and their loved ones coordinate doctor appointments, navigate employer health benefits, and connect to all sorts of auxiliary services.

Initially, CircleOf CEO Michael Jordan recalls that his CHILL team was given a broad, somewhat vague mandate: providing cancer patients with a way to receive information.

"For most executives at the time, the focus was AI, predictive analytics, and machine learning," he says. "We were thinking [that] you would put the medical records into an algorithm, and out will come sort of an optimal cancer treatment plan for that patient."

But through the CHILL process, Jordan's team saw how the patient experience varied based on the number of caregivers involved, and their access to different sources of information.

"[We then said,] 'How do you build a product that democratizes that experience, so that everyone gets the non-clinical support they

Listen to a half-hour conversation with CHILL's Kate O'Keeffe, at innovation leader.com/ il-live.

need...to make good decisions about [their care]?'" Jordan says. "We started with AI...and we ended with something that's almost a social caregiving network. ... [CHILL] leads you to the truth, not the buzzword everyone is doing at the moment."

LIFE AFTER CHILL

Idea challenges and hackathons can often fizzle out after teams go back to their day jobs. However, O'Keeffe sets follow-up meetings before CHILL ever starts to help avoid that fate.

"[W]e've immediately lined up a lot of these post-Living Lab activities" she says. "The longer that process takes to...schedule, the greater the risk we have of...entering the valley of death."

During these follow-up meetings, project leaders have to refine the business model, test assumptions, work out intellectual property, and decide how to bring the idea to fruition— as an internal initiative or an independent startup. If teams build their idea into a startup, they must also pick leadership for the new company.

Jordan was chosen to be CircleOf's CEO during this follow-up process. (Jordan had previously been working as a CHILL "Distinguished Entrepreneur.")

After CHILL, Jordan says, startups must also hustle to secure additional funding. "You're able to raise money from the partners [involved in the lab], and that gives you a good chunk of seed money," he said, "but it's still up to the team to get enough traction to go out...and secure [more funding]."

Not all of the lab's partners remain engaged after startups have gained their footing. According to Jordan, Walgreens, one initial partner, has become less involved in CircleOf. Meanwhile, his team has weekly governance calls with Community Health Network. Cisco is also one of CircleOf's biggest customers.

According to Jordan, CHILL excels in marshalling the initial resources and support that can make the innovation process smoother, even after the bootcamp has concluded.

"[CHILL] took...product development, customer development, and market research, and [condensed it]," he says. "If I had come up with the idea for CircleOf on my own, it would have taken six months to a year to get to where we had gotten in just 48 hours."

The CHILL initiative recently moved into Cisco's engineering division; it had previously been part of the company's customer experience organization. According to O'Keefe, this shift has better enabled her teams to develop ideas after a Living Lab has concluded. ◢

At about 32,000-square-feet, Sam's Club Now is only about one-quarter the size of a typical Sam's Club location.

AUGMENTED RETAIL

Inside the new Sam's Club incubator store in Dallas

BY PATRICIA RIEDMAN YEAGER

EDDIE GARCIA IS holding up an iPad as his coworker Keri Voke goes to grab a "smart" shopping cart. Garcia opens an app that asks him where he'd like to shop. He selects "Pirate Cove," and the screen instantly displays a camera view of Voke at her cart. But the cart has been transformed into an animated pirate ship. With another tap, Garcia turns it into a bucking longhorn; one more and Voke is at the helm of a rocket ship blasting through a meteor shower. ¶ "See, the magic starts here," says Garcia, Vice President of End-to-End Experience at Sam's Club, pointing to the shopping cart, "and ends here," he says, lifting up the iPad, explaining that the augmented reality technology works by picking up specific markers on the cart using the iPad's camera, and then layering on digital images. Garcia says the goal is to create a shopping experience so different "that your kids are demanding to come to Sam's Club, because it's so much fun."

Kid-friendly AR is just one offering at Sam's Club Now, a cashier-less incubator store based in Dallas. This 32,000-square-foot location is a quarter of the size of a regular Sam's Club and has been hailed as the chain's "epicenter for innovation" by Jamie Iannone, CEO of SamsClub.com. Sam's Club is owned by Arkansas-based Walmart Inc., but the Sam's Club e-commerce business and the team that oversees the incubator store are based in San Bruno, Calif.

The incubator store has been rigged with 700 cameras, about 400 Bluetooth locator beacons,

robotics, computer vision, and a host of other technologies aimed at enhancing the retail experience while also making visits more efficient. It was created as a platform for "testing out hypotheses" about what's possible, explains Voke, Product Manager for Innovation. Winning concepts will be rolled out to Sam's Club's roughly 600 locations nationwide.

The store opened in November 2018, less than a year after Sam's Club announced it would be closing 63 out of its 660 locations around the US. About 10 of those stores have been converted into e-commerce fulfillment centers. It also comes on the heels of Amazon unveiling its first cashierless Amazon Go convenience store in Seattle last year, followed by others in San Francisco and Chicago. Venture capital money is also pouring into retail automation and new store formats.

Here's how Sam's Club is responding.

MOVING FAST

The idea for an incubator store, from conception to opening day, played out in less than six

months. It pulled in more than 100 people—from the company's California mobile team, as well as from a brand-new Sam's Club Dallas Innovation Center, which officially opened in January. Garcia says the new Center has nearly 150 people on its staff, mainly engineers focused on the domains of machine learning and computer vision.

Recruiting locally was easy, Garcia says, as the Dallas area is rich in tech talent. And "the executive support from the board all the way down has been tremendous," he adds. "When you hear [Sam's Club CEO] John Furner talk, we're focused on people, products, and digital."

Garcia says that instead of facing cost constraints, the push in recent months has been on speeding the time to market. "The biggest thing for all of us is, how do we go faster, and faster, and faster?" he says. Garcia reports to Iannone, the CEO of SamsClub.com.

Unlike Amazon Go, which automates the checkout process with a proprietary technology set that blends computer vision, a mobile app, and sensors, checking out at Sam's Club Now requires you to scan items individually with a version of the Scan & Go mobile app developed especially for this store. (Amazon Go locations are only around 1,500 square feet and cost a reported $1 million each just for the technological infrastructure. Voke says the size of the typical Sam's Club—about 132,000 square feet—was a definite factor in determining their checkout technology.)

The app, launched into Sam's Club two years ago, was developed by the same engineers who created a similar app for Walmart. But while Walmart abandoned its version of the app in 2018, citing low interest from its customers, use among Sam's Club Members on its version of the app was up 40 percent in 2018.

One of the reasons the app has been better received at Sam's Club, Garcia says, is that its stores

Principal Product Manager Keri Voke pushes a shopping cart, which has been transformed into a Longhorn steer via the Scan & Go mobile app.

employ exit greeters who examine receipts, an already-established process that worked well in tandem with the app checkout process.

While the Scan & Go app for the Dallas incubator store is built on the foundation of the primary Sam's Club app, Voke says, it adds many features that club members have been asking for.

"[T]here are a lot of different ways to make a member's shopping trip faster. ... [T]hat's the ultimate goal: convenience and speed," she says. "We are a retail chain that has 600 clubs...and anything we put out to our members, they expect it to work as it should. ... That's why this lab is so important. We can really pinpoint any tweaks we need to make and can learn from our members and associates about how people are using it."

MEMBER ASSOCIATES REPLACE CASHIERS

In lieu of cashiers, member associates are now stationed at the store entrance and exits to assist people with downloading the Scan & Go app; help them sign up for memberships; verify that they're old enough to buy alcohol; or help with whatever new technology is being rolled out that week. (They also make sure that each member who downloads the app gets a free prize, such as a small food item.) Member associates provide feedback to the development team, so they can continually improve the next generation of the technology.

"We made it as simple as we could to scan your membership card and you're in, because we know login is such a pain point for members," Voke says, adding that there's also a guest check-in option for people who've forgotten their password at home and still want to shop. "That was a really big thing for us to solve, because if we had a login process each time, we would have had pushback." Once a member logs in with the app, they stay logged in.

WAYFINDING & NAVIGATION

Indoor navigation enabled by the Bluetooth beacons and other technology in the incubator store helps guide customers to exactly where an item is within the club, Voke says. She demonstrates by typing a particular brand of dog food into the search field of her Scan & Go app and then walking over to find it. The app also shows inventory levels and whether an item is out of stock.

Feedback on navigation and other features is gathered via the app, associates' observations, and other technology. "We might introduce a new feature every week," Voke says. "I'm a big fan of the lean startup methodology. This whole

"This was intended to be experimental — just pure delight and fun — to show you what AR can be."

KERI VOKE, PRINCIPAL PRODUCT MANAGER, SAM'S CLUB

concept of rapid prototyping is something that people didn't think could apply to enterprise. But Sam's is a $60 billion company, and we're literally scrappily putting things together as fast as we can to see if we can get them [out to the] chain."

AR EXPERIENCES THAT HELP TO MOVE PRODUCT

Smart shopping carts are just the beginning of the AR experiences Sam's Club Now is exploring, Garcia says, as he picks up a package of Member's Mark Pulled Pork, the Club's in-house brand, from a refrigerated case. "We also want to bring the stories of our items to life. There's a rabid fan base for this pulled pork in the Sam's Club community, because it tastes amazing," he says. He holds the iPad in front of the package, and up pops an animation of meat on a grill. "The idea is to surprise, delight, and inspire," he says.

"We don't have it yet—but we're going to put little markers on items that have an augmented experience around them," Garcia says, noting that Sam's Club collaborated with Eko, an interactive media company in New York.

Other Sam's Club Brands with AR experiences include Sam's Club in-house brands of almond milk, honey, trash bags, and its Donut Shop Cof-

Individual products on a shelf can be enhanced with a layer of augmented reality imagery and information.

The smart shopping list "should not only help you find the items that you might be shopping for that day, [but] we should intuitively know the items you'll want to purchase that day."

KERI VOKE

fee. (That last product transforms into a coffee shop with a steaming hot cup of coffee in front of you.) Garcia acknowledges that working with outside brands is a huge opportunity. "We've had some suppliers see this, and their mouths are watering, and they're saying, 'How do I get that for my stuff?' This is all about learning and iteration. We'll figure out when and if we absorb this into the Sam's Club app itself. Or do we create a different app with a different experience? The best way to innovate is to do it alongside your members, so you can figure out what's working and what's not," Garcia says. For instance, the Magi-Cart AR experience was originally planned for a smartphone, but through member feedback, the team learned the experience really required the bigger screen of an iPad to bring it to life. So there are now six loaner iPads circulating in the store

(equipped with security mechanisms so they don't disappear) just for this purpose.

"Everyone talks about AR, but in terms of making it useful or even delightful in a retail environment—I think that hasn't been figured out," Voke says. "So this was intended to be experimental—just pure delight and fun—to show you what AR can be."

ROLLING OUT CONCEPTS TO OTHER SAM'S CLUB STORES

Two months after the store opening, Voke and Garcia report that several concepts introduced at Sam's Club Now are being deployed as pilots at another Sam's Club location, and if they do well, a larger rollout could lie ahead. These include:

▶ **Alcohol Sales:** The Scan & Go app will allow members to purchase alcohol by entering their birth date into the app. An Associate is still required to check a member's ID to complete the purchase, just as they previously did at the cash register, but the process is sped up a bit by the fact that people pre-enter their birth dates. "It's a feature our members have been asking for for a long time," Voke says.

▶ **Digital Price Tags:** Digital price tags can change in real-time. That's convenient because "Sam's Instant Savings" prices are constantly in flux, and they traditionally have required staffers to print out and post new price tags whenever there's a change. "We've had the merchandising teams weigh in to think about pricing differently," Voke says. "How do they think about a digital price tag [being] a benefit from a technology and operational perspective? It's really pushed every part of the organization to think a little bit differently."

Other features in the works for the store's Scan & Go app include voice search and a smart shopping list. When launched, Voke explains the smart shopping list "should not only help you find the items that you might be shopping for that day, [but] we should intuitively know the items you'll want to purchase that day." A data science team developing the smart shopping list feature will take into account past purchase history. Shoppers can also add items to the list, and the app will plan a path for them around the club.

GATHERING FEEDBACK AND DATA

The Scan & Go app is set up to ask for feedback at the end of every transaction. There are also follow-up emails sent to members asking them for

feedback on their shopping experience. "We look at analytics of every kind," Garcia says. "Eventually, we're going to be measuring foot traffic, idle time around certain items, and traffic flows all through the club, using computer vision."

Member associates also play a key part in capturing learnings, they say. In two months, they've learned that this club attracts primarily tech enthusiasts, neighborhood shoppers, and shoppers who are simply looking for the closest Sam's Club and are unaware that it's an incubator store. The member associates are the ones who explain how the club is different, how the app works, and trying to translate that into a positive experience for those different shoppers.

The data from the first few months shows that "these associates are the highest-rated in the entire chain," Voke says.

That puts added pressure on the team to create an app that is user-friendly for both customers and the associates, freeing associates up to provide high-quality customer service. "It's the thing we hear loudest," Garcia says. Members "love the interaction with the associates. ... It's an interesting paradox. The digital pieces are unleashing old school, face-to-face human interaction."

And while enhancing the in-store experience is a central tenet of Sam's Club Now, the team knew some shoppers would find same-day delivery more convenient. So they leveraged a partnership with Instacart to offer a delivery option (which is also available in half of all Sam's Clubs nationwide), as well as a one-hour pickup option for people who've purchased items through the Sam's Club Now app at home or on the go.

WHAT SCALES?

At just six months old, Sam's Club Now is an early crowd-pleaser. But it remains to be seen how many of its innovations will be viable enough to deploy to the entire chain.

"We're here to learn," Garcia says, noting that he's already started to challenge the team on how it can package up winning ideas and quickly scale them to all the clubs. "The membership tablet is a great example; that's a no brainer," he says. With the tablet, associates can sign up a new member in two minutes. "Today, it takes double that—if not more—to sign someone up in the club," he says.

"We're learning so much," Garcia says. "Innovation isn't a one-shot deal. We're going to continue to push the experience." ⬡

The store's Bluetooth beacons, in conjunction with the app, can guide shoppers to a specific item.
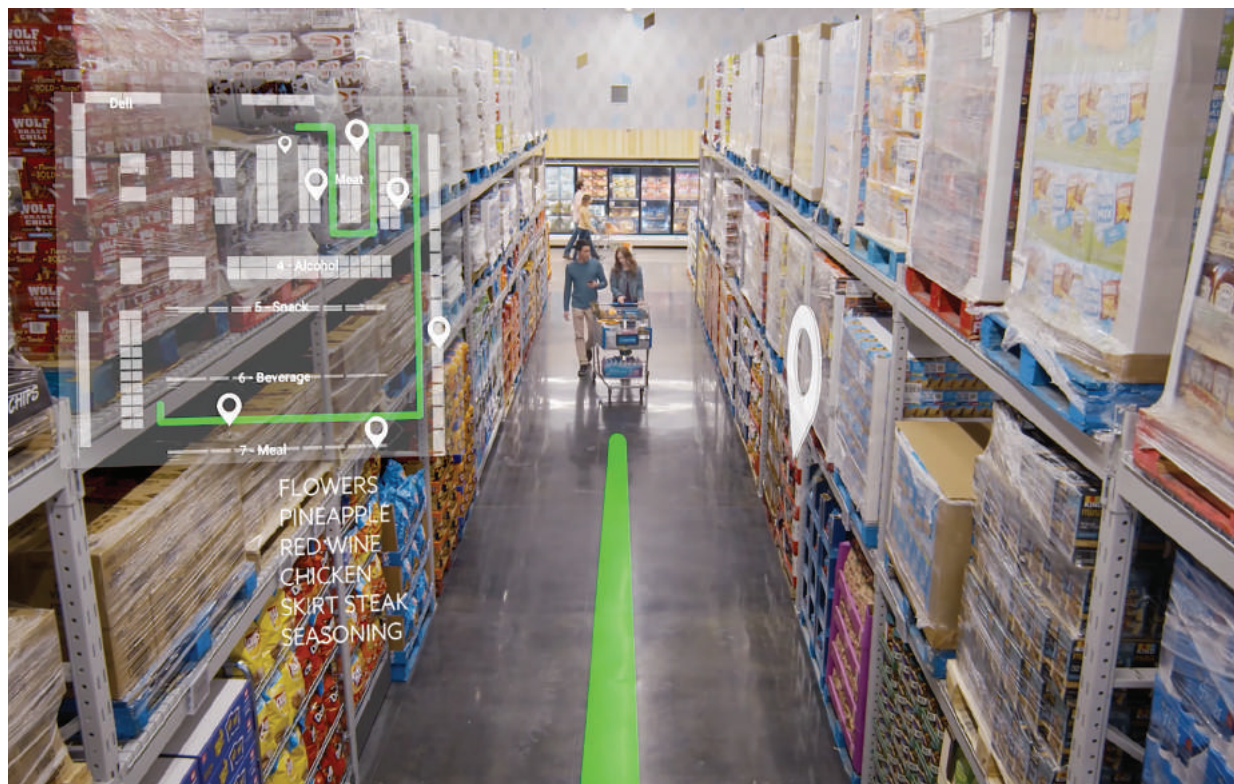
Guidance

"People believe
that agility,
and speed, and
innovativeness
are somehow
negatively
correlated to
the size of the
company.
I disagree."

Mohan Sawhney,
Kellogg School of Management

B L A N K C H E C K

Kellogg School professor
Mohan Sawhney on
creating freedom within
a framework

BY KAITLIN MILLIKEN

M

Mohanbir Sawhney is an advocate of handing corporate innovators a blank check.

Sounds like a dream, no?

But his blank checks come with audacious goals, tight timeframes, and the expectation that giant leaps can be made when a team is freed from traditional budget milestones.

"It's freedom within a framework," says Sawhney, a professor of marketing at Northwestern's Kellogg School of Management.

According to Sawhney, giving teams a blank check and a 12- to 24-month timeframe can create a sense of urgency that unlocks creativity. The next step, he says, is to choose the right team.

"You can create the sense of ownership and entrepreneurship by really selecting people, giving them ambitious goals, giving them unconstrained resources, and getting the hell out of the way," he says. "I define the role of the CEO as three things: Find the right people, put them in the right jobs, and get the hell out of the way."

On top of teaching at Northwestern, Sawhney is the technology director for the university's Center of Research, Technology, and Innovation. He has written seven management books, including *The Sentient Enterprise*, which explores how data can help large companies drive competitive advantage. Sawhney has also advised companies including Adobe, GE, Intuit, and General Mills.

We spoke with Sawhney in his office at Northwestern in mid-2018. During the conversation, Sawhney discussed how a blank check can create urgency; the difference between manager-led and founder-led companies; and three different ways to measure results.

THE BARRIERS TO INNOVATION

[L]arge corporations find it difficult to innovate on domains that don't fit neatly into their established business unit structure—opportunities that are in white spaces that cut across the way that they're organized. [But]...opportunities don't give a damn how you're organized. ... [Some white spaces] require collaboration and work across business units, as well as outside the organization. Both lateral mechanisms for coordination and taking an idea forward are very poorly established. And the larger the company, the bigger and more complex this problem is.

I think the other [challenge] is that it's very difficult to get past what I call the "tyranny of the submarket," and the legacy, and the fear of cannibalizing or disrupting your core business. Even though you [know that] disruption is coming, it's really difficult to kill your cash cows in the search for something better. And I think related to that is the collective inability of large established companies to see disruption. ... Their business is getting disrupted, but a combination of success in the legacy businesses and a mindset that looks at the past really doesn't allow these [companies] to see disruption.

[Many] CEOs [also] recognize that a combination of new technologies, artificial intelligence, and globalization are...forces that are really disrupting the status of every industry. But they simply aren't able to execute. They just get in their own way—whether it's bureaucracy or the speed with which they are able to move. ... So I think that even when the strategy becomes clear to a leadership team, the execution simply isn't happening.

GETTING C-SUITE BUY-IN

An innovation team that is not empowered by the CEO and the C-suite is doomed to fail. It is simply not a middle management initiative. So the first charter item on the agenda when you're starting an innovation team is executive sponsorship and leadership. And leadership is not only the CEO; it's also the board.

I've also found that when you're trying transformative innovation or disruptive innovation, you cannot do it within a business unit, so it has to be...a corporate incubator-type organization. But in order for that incubator to go beyond ideas and to scale any of the initiatives, it has got to be driven back to the core business. That's where executive sponsorship...is critical. Because otherwise, you'll just be doing cute experiments sitting out in...yet another silo, the innovation silo. Because it's relatively easy to pilot new ideas, but what's really challenging is to scale them by bringing them back into the core business and using [the] distribution channels, the brand...all of the assets of the mothership. Without that, you're simply another startup.

BIG COMPANIES AND THE STARTUP MINDSET

People believe that agility, and speed, and innovativeness are some how negatively correlated to the size of the company. I disagree. There's a stronger correlation [between] founder-led companies [versus] manager-led companies.

Founder-led companies can reach any level of scale and still be a startup. Amazon is Exhibit A. As Jeff Bezos likes to say, it's a "Day One" company, so it will always have the Day One spirit. ... They're a humongous company with a giant val-

Blank checks "can unlock huge amounts of creative potential, as well as urgency, because you're effectively creating these mini-startups inside established companies by running VC-like strategic investments."

uation, but they still operate as a startup. I'm on the board of a company in India [Reliance Jio Infocomm] that is in the telecommunication…services space. It's a disruptive startup—the world's largest startup—[and] it's building a 4G network in India. It's a founder-led company…and that company is 70,000 people, $35 billion in [capital expenditure], 225 million customers, and it turns on a dime. Literally, within weeks they are able to secure their ability to move quickly, all because there's one person in charge [so] everybody knows what the deal is.

[I co-wrote a book, *Fewer, Bigger, Bolder*, which] talked about the idea of creating entrepreneurs or entrepreneurial ownership culture inside a large, established company [not led by a founder,] and a phenomenon that we called blank checks.

Blank checks are the idea that you create a high-potential team within a large company and you give them a stretch goal that seems impossible—a very, very ambitious innovation goal. Against that what you do is you give them a blank check, basically whatever resources you need—but an impossibly short timeframe with clearly defined outcomes.

That can unlock huge amounts of creative potential, as well as urgency, because you're effectively creating these mini-startups inside established companies by running these VC-like strategic investments.

PICKING THE RIGHT METRICS

[Metrics] depend on whether it's a new business being created, or if it's [an existing] business that is being grown.

What I advise people to do is to think about three kinds of metrics: input, throughput, and output. Think of this as an innovation pipe.

The first is metrics that relate to input. How many ideas? How many prototypes? What is the volume [of concepts]? …

The second thing is throughput, which [relates to] velocity. How fast are we moving things from the idea stage to the prototype stage to the [minimum viable product] to the commercialization [stage]? There, I have to make sure that the innovation that comes in the pipe is being shepherded at an appropriate speed. Am I able to also successfully kill [failures] and scale the [successes]?

And then you have outcome metrics, which [are] sales, revenues, profits, and classically we talk about percentage of sales from new product… As your innovation pipeline [reaches a] stable state, you should be seeing all these.

[When] you are creating an innovative business from scratch—particularly something that has a reasonably long gestation period where you're not going to see results right in the short run, [especially if] you're building something fairly disruptive—initially, you'll only have the input metrics.

On the other hand, if you're doing the classic blank check [approach, output metrics are the best indicator of success]. We talk about blank check [lasting over a] 12- or 24-month period. You [expect to] have cash flow, market share profitability, those kind of metrics…
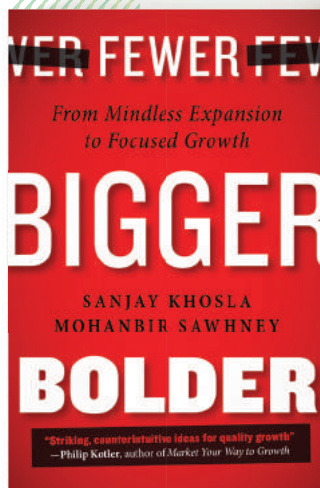
ACQUISITIONS: WHEN INNOVATION COMES FROM THE OUTSIDE

When you do decide to go the acquisition route…you have to have a very clear vision of what you're buying and how you are going to preserve the value of what you have bought.

One thing I learned from the team at Cisco…is they told me that [they] are very clear: Either we buy customers, or we buy code. So when WhatsApp was acquired by Facebook they're buying customers… But on the other hand, when Cisco buys an early technology startup, they buy code, they're buying technology. They don't care about customers; [the startup] may not even have customers. … [I]f you're buying code, if you're buying technology, then it's easier, because you're just integrating it into the platform and the relationships [and culture] are less important.

If your culture and business practices are very diametrically opposed and different [from those of the acquired company], then you need to preserve the independence of that organization for a longer period. For instance, if you are Amazon acquiring Zappos, Zappos had a very distinct culture. They're very customer-focused, and high service, [and] they didn't care as much about [the] cost. Rolling Zappos into the larger Amazon very quickly—it would have lost a lot of the unique culture that had been created there. But if there's a reasonable alignment, you can move faster.

…It's this balancing act of preserving the creative spirit, and the entrepreneurial spirit, and the capability that you acquired, but at the same time being able to leverage [the full benefits of the mothership]. That's not easy to do, which is why a lot of these startup acquisitions fail, because the technology simply dies or the people leave. ●

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INNOVATION ACADEMY

What We're Reading

Compiled by Kelsey Alpaio

Transform Your Company for the Innovation Universe

BY NANCY A. TENNANT

How do companies become innovative for the long haul, rather than making it the "flavor-of-the-quarter"? That's the central question that Nancy Tennant, an adjunct professor at Notre Dame and the University of Chicago, addresses in her new book, *Transform Your Company for the Innovation Universe*, published in January 2019. Tennant was also the Chief Innovation Officer at Whirlpool Corp., where she worked for three decades.

Creative Construction: The DNA of Sustained Innovation

BY GARY PISANO

Growth is essential for sustaining any business—from behemoth corporations, to garage-based startups. But conventional wisdom says that only startups can disrupt and be innovative. In his latest book, *Creative Construction: The DNA of Sustained Innovation*, Gary Pisano, Professor of Business Administration at Harvard Business School, lays out his research on how big companies can use strategy, system, and a culture of innovation to achieve sustained growth.

Today's Innovator

BY AARON PROIETTI

In his new book *Today's Innovator*, former Transamerica innovation executive Aaron Proietti talks about innovation not as an outcome or destination, but as a competency that can help an organization escape the pull of the status quo. "By treating innovation as a competency, rather than an outcome," he writes, "innovation can be designed into the very fabric, or essence, of the organization to ensure it is contributing exactly what is required of it."

Business Model Warfare: The Strategy of Business Breakthroughs

BY LANGDON MORRIS

"Business model innovation is perhaps the most important form of innovation," contends author Langdon Morris, "because it's available to any company of any size, anywhere in the world. All it takes is insight, and the willingness to listen well and try something new." In his new book *Business Model Warfare: The Strategy of Business Breakthroughs*, Morris lays out a framework and questions that can be helpful in designing new business models or improving existing ones.

The Components of Innovation Capital

What convinces people to support an idea, whether the support be their time (e.g., joining your project), money, endorsement, or any other backing to help you and your idea? ... Our research suggests that people and organizations will be influenced primarily by three interrelated, innovation-specific factors:

· Human capital: who you are as a leader of innovation
· Social capital: who you know with expertise and resources
· Reputation capital: what you've done to warrant a reputation for innovation.

The effect of these three types of capital can be multiplied by *impression amplifiers* that help you gain attention and credibility for your ideas. How exactly are potential supporters influenced by these factors? In academia, we use what we call a *simultaneous equation model* to describe how these factors work together.

Sponsors are simultaneously weighing all these factors together: whether you have the innovation skills as a leader to pull this off (who you are as a leader of innovation), whether you are well connected with others who will need to support your project (who you know with resources or expertise), and whether you have a track record and reputation for innovation success (what you are known for). And the potential sponsors look at the things you have done that persuade them (the impression amplifiers). They combine all these parts of your innovation capital to decide whether to support you and your ideas.
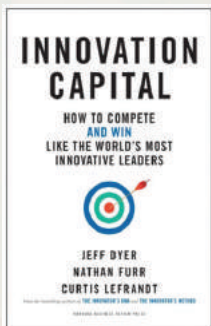
These combined parts work together like gears in an engine. As you get each gear moving, it can have a *flywheel effect*. The flywheel effect, first coined by management expert Jim Collins, refers to the process of getting a huge flywheel (say, a massive 5,000-pound metal disk) into motion. Initially, attempts to move the flywheel produce almost no movement—it is almost impossible to imagine the flywheel at speed. Then, slowly, the wheel gathers speed, and suddenly the momentum of the flywheel kicks in your favor. You push no harder than during the first rotation, but the flywheel goes faster and faster. Each turn builds on the work done earlier, compounding your investment of effort. Eventually, the huge, heavy disk flies forward, with almost unstoppable momentum. The innovation-capital engine—with its three gears and the lubricant of impression amplifiers—can propel a person's innovation capital in a similar way.

This analogy is relevant because building your innovation capital starts with small steps that can eventually have big outcomes. Innovation capital outliers—leaders like Jeff Bezos and Elon Musk, who are numbers one and two in our ranking—didn't start out being that different from the rest of us. They accumulated their innovation capital through small steps and then got momentum from the flywheel cycle. Today they have more good ideas to champion because more people bring good ideas to them; they develop more social connections because of their reputation—people want to know them. And because they have access to a greater number of good ideas and more social connections, they can build their reputation for innovation by launching more innovations. ...

Directory of
Firms & Providers

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Babson College's mission is to teach entrepreneurial leaders everywhere how to make a real-world impact. Entrepreneurial leaders move teams through change and disruption, navigating through uncertainty and recognizing growth opportunities. Babson Executive Education helps organizations develop entrepreneurial leaders across industries to drive growth and innovation. Our custom programs are co-created learning journeys that offer interactive ways for groups, led by our world-renowned faculty, to develop forward-looking platforms and redesigned business strategies.

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Imaginatik is the world's first full-service innovation firm. We are an advisory, software, and analytics provider devoted to making innovation a sustainable practice within the modern enterprise. We've been named a World Economic Forum Technology Pioneer, and Forrester Research has cited our Innovation Central software platform as a Leader in Innovation Management Solutions in both 2013 and 2016. Imaginatik was founded in 1996, with dual headquarters in Boston, Mass. and Fareham, UK. We've spent 20 years helping the world's largest and most respected companies innovate.

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PA Consulting Group is an independent firm of over 2,600 people. We operate globally from offices across the Americas, Europe, the Nordics, and the Gulf. PA is the only consultancy with over 70 years of experience across consulting, technology, and innovation. We define success as achieving exceptional results that have a lasting impact on businesses, communities, and individuals worldwide.

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Founded in 1999, Planbox is a pioneering provider of AI-Powered Agile Innovation Management software and services. An AI engine mines your data for insights while your community collaborates to discover, develop, and capitalize on the best ideas from employees, customers, partners and suppliers.

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PlanetM is Michigan's mobility brand and business development program driven by a partnership of mobility organizations, communities, educational institutions, research and development, and government agencies working together to develop and deploy the mobility technologies of the future. Michigan has always been the leader of the automotive industry, and as vehicle and transportation technologies continue to evolve in amazing ways, Michigan is continuing to lead the way.

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The Proseeder platform empowers corporations with adaptive tools for managing deal flow, collaboration, diligence, and execution; quantifying strategic ROI of investments and partnerships that supercharge corporations efforts to innovate iteratively.

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RTI Innovation Advisors provides strategic innovation consulting services, technology, market intelligence and research, and commercialization services to help our clients accelerate their ideas to market. With over 50 years of innovation experience, we have the expertise, global network and capabilities to help any private sector company or government entity improve innovation outcomes. We meet our clients on any step of their innovation journey and help them succeed.

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Startgrid is an innovation platform helping companies make their external innovation efforts more successful. From tracking business needs to scouting startups to discovering the best solutions, Startgrid makes it easy for teams to solve problems, share intelligence, and measure the impact of their efforts on the business.

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SwitchPitch is the leading Startup Relationship Management platform for innovation teams at Fortune 1000 companies. From identifying startups to relationship management, SwitchPitch gets innovation teams to ROI outcomes quickly and efficiently.

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Techstars is a worldwide network of 10,000+ corporate, government and academia partners, startups, and investors who accelerate innovation and transform industries. 1,600+ startups have gone through Techstars accelerator programs. 87.4% are active or have been acquired and have a market cap of more than $18 billion. In 2018, Techstars had 44 separate accelerator programs covering six continents and a wide swath of industry verticals. According to Harvard Business Review, Techstars is considered one of the top two accelerator programs in the world.

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Wellspring is the world's leading provider of innovation management software and solutions for both corporations and universities. We help clients succeed in today's innovation economy by researching technology trends, finding innovation partners, identifying startups, commercializing inventions, and coordinating global R&D and innovation programs. Founded in 2003 as a spin-out of Carnegie Mellon University, Wellspring works with more than 500 organizations worldwide to support the continued development of the global Knowledge Supply Chain. For more information, please visit wellspring.com.

JUNE 27-28, 2019

Innovation Leader London Field Study

London

The latest in Innovation Leader's series of Field Study learning expeditions takes 50 corporate executives to R&D labs and innovative spaces around London. The focus of the event will be on how smart risks and bold experiments can create an innovation culture in established organizations. Leading sessions will be executives from BNP Paribas, Royal Bank of Scotland, AECOM, Thomson Reuters, and more.
london2019.innovationleader.com

JULY 11 & 25, 2019

Executive Roundtables

Chicago & Minneapolis

The Innovation Leader Underground is a small roundtable series for selected senior executives working in innovation, strategy, and R&D. By creating a confidential and off-the-record space, and facilitating highly-participatory conversations, we're empowering executives to share recommendations, insights, and guidance with one another.
innovationleader.com/events

JULY 15-17, 2019

Fortune Brainstorm Tech 2019

Aspen, CO

Fortune Brainstorm Tech is the magazine's annual invite-only summer retreat for leaders from Fortune 500 companies, emerging entrepreneurs from the tech world, and the investors who finance them. Confirmed participants for this year's event include Beth Ford of Land O'Lakes, Margo Georgiadis of Ancestry, Ynon Kreiz of Mattel, Doug McMillon of Walmart, and more.
fortuneconferences.com/fortune-brainstorm-tech-2019

SEPTEMBER 19-20, 2019

Innovation Leader Boston Field Study

Boston, MA

Innovation Leader's Boston Field Study will bring 50 innovation professionals inside innovation labs and corporate HQ's around Boston. Past IL events in Boston brought participants inside the Harvard Innovation Lab, Autdodesk's BUILD Space, CVS Health's Digital Innovation Lab, Microsoft R&D, iRobot, Greentown Labs, and more.
boston2019.innovationleader.com

OCTOBER 8-10, 2019

World Innovation Convention

Amsterdam

The annual conference brings innovators to Amsterdam, with speakers from Airbnb, Uber, IDEO, Google, Heineken, Philips, and more.
inno-world.com

OCTOBER 22-24, 2019

Impact 2019

San Francisco, CA

Innovation Leader's annual member gathering is back—and better than ever, hosted this time in San Francisco. Impact 2019 is the only innovation conference expressly designed just for corporate innovators—no consultants, no software vendors, no sales pitches. In 2018, innovation professionals from Google X, Amazon, Lyft, Facebook, the US Department of Homeland Security, Walmart, and more of the world's biggest companies shared learnings and advice with their peers at Impact. In the words of a 2018 participant from Dominion Energy: "Great insights, knowledge, and networking. Really a meeting of peers unlike any other." This year's session leaders come from Nationwide, Ericsson, Bose, Citi Ventures, Clorox, Intel, BASF, and more.
impact.innovationleader.com

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