

THE SHIFT

NEW RULES:

INNOVATION, ECONOMICS, AND
REGULATION IN THE DIGITAL WORLD

December 2023

Data Catalyst Institute



INTRODUCTION

OUR SHIFT FROM THE PHYSICAL WORLD TO THE DIGITAL WORLD

Since about 1990, and particularly during the past decade, humans have dramatically augmented our Physical World with a Digital World. Like other things humans do that are unique to our species, building a Digital World of commerce, entertainment, and other uses is quite a strange evolutionary step to take.

This evolutionary shift has not been gradual. Rather, the Digital World has punctuated our reality rapidly and intensely. This has, in turn, disrupted every walk of life, creating a spectrum of new threats and opportunities that span the realms of innovation, business, regulation, and society. And whether you're prepared or not, the "new rules of the Digital World" are being written right now.

Digital software, platforms, tools, and apps have rapidly changed the nature and scope of how people consume, businesses operate, and governments regulate. The transformation of business environments into digital ecosystems - increasingly automated, networked, data-driven, and competitive - is disrupting and restructuring entire industries. In a business landscape where data and digital technologies are powering a new industrial revolution, the most successful contemporary leaders need to understand both the Physical World and the Digital World.

Companies rooted in the Physical World control resources such as energy (oil, sunlight, water), territory (land, air, sea), currency (gold, diamonds), information (printing press, news media), and governance (nation-states, intergovernmental bodies). Rulers of the Physical World traditionally held vast sway over such "natural resources" and thus influence over society's norms and institutions.

In a world where access to data powers digital software, platforms, tools, and apps, plus leaders' decision-making, individual companies and entire industries are conducting more and more of their business in the Digital World. While companies rooted in the Physical World are certainly still important, those rooted in the Digital World have gained tremendous monetary value and influence over society's norms and institutions during the past 30 years.

This report gives an overview of the new rules of innovation, economics, and regulation of the Digital World, including new threats and opportunities facing the power players operating in it.



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NEW RULES

1. BUILDING THE CONTEMPORARY DIGITAL WORLD

For thousands of years, humans have interacted with each other to socialize, form families and communities, buy and sell, and go to war entirely in the Physical World. Our bodies and minds evolved to succeed in this world with “the rules” of that world embedded in our DNA.

Then, very recently, we started to build a Digital World alongside our physical one: The Netscape Navigator web browser was launched 28 years ago when the Internet had a 1% adoption rate. Facebook is about 20 years old. The iPhone was launched 16 years ago. TikTok is seven years old. To contrast those digitally-rooted companies with some other well-known brands, Citibank is 210 years old; ExxonMobil is 140; GE is 130; GM is 114.

As digital software, platforms, tools, and apps become more convenient and powerful, consumers talk, shop, and perform other functions online more, too. Large and small businesses, nonprofit organizations, and government agencies have moved more of their operations to digital tools and platforms. And policy and regulatory bodies are governing, or attempting to govern, this new world we’ve built for ourselves.

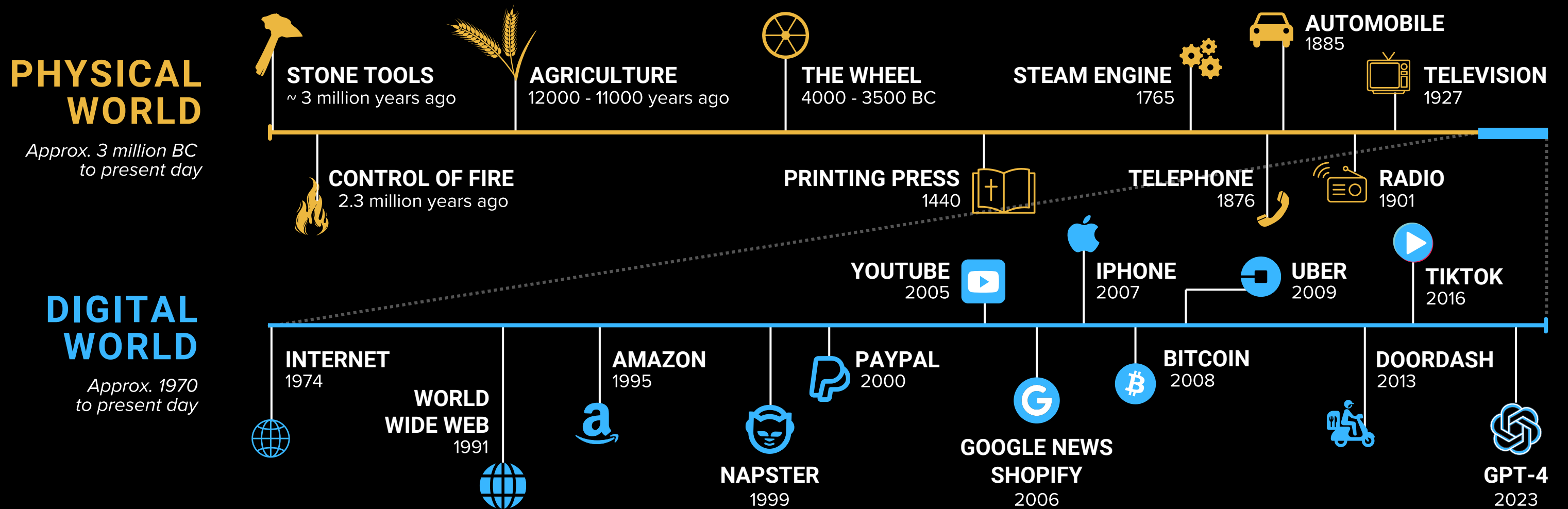
While it may sometimes seem so, the Digital World is not completely separate from the Physical World - it augments it. We travel between these worlds many times every day without giving it much thought.

- A customer in the Physical World orders and pays for pizza using an app from the Digital World. The pizza is then made and delivered in the Physical World based on instructions from the Digital World.
- Amazon, a massive Digital World-based retailer, controls enormous numbers of trucks, vans, and planes that make rapid delivery in the Physical World possible. Meanwhile, Amazon also owns about 500 Whole Foods stores - which offer delivery services in the Physical World that can be paid for and tracked in the Digital World.
- Data centers that power the Digital World are built in the Physical World, where they consume space, electricity, and water. (In fact, an Oxford professor is mapping the “political geography” of our digital infrastructure.)

NEW RULES

1. BUILDING THE CONTEMPORARY DIGITAL WORLD

For most of humanity's history, we have existed in only the Physical World. During the past half-century, and particularly the last 30 years, we have augmented this world with a powerful Digital World to enhance our reality.



NEW RULES

1. BUILDING THE CONTEMPORARY DIGITAL WORLD

The Digital World does not necessarily operate under the same rules as the Physical World. The disruption caused by the Digital World across communications, politics, entertainment, business and commerce, the law, and other areas has created friction points that must be resolved through new rules. And the victors of battles between the forces of innovation, economics, policy, and society forge these rules for the future.

This shift from the Physical World into the Digital World is forcing a reconciliation between the old and the new across our economies, markets, and regulatory frameworks at a speed and intensity unlike anything in human history. Lawmakers, CEOs, and others in positions of power and authority are scrambling to adapt everything from outdated copyright, antitrust, and telecom laws to human resources, payroll, and work-from-home policies. Global leaders are facing a historical inflection point.

DIGITAL WORLD "ERA"	DIGITAL WORLD LEADERSHIP TITLES	FIRST USAGE	AREAS OF RESPONSIBILITY	CURRENT REAL-WORLD EXEMPLAR
Technology (1980s)	Chief Information Officer (CIO)	1981	Oversees information technology strategy	Marco Argenti, Chief Information Officer, Goldman Sachs
Technology (1980s)	Chief Technology Officer (CTO)	Late 1980s	Oversees technological needs as well as research and development	Elizabeth Stone, Chief Technology Officer, Netflix
Information (1990s)	Chief Information Security Officer (CISO)	1994	Oversees information, cyber, and tech security	Fredrick Lee, Chief Information Security Officer, Reddit
Information (1990s)	Chief Knowledge Officer (CKO)	1990s	Supervises preservation and distribution of knowledge and intellectual capital	Moses Adoko, Chief Knowledge Officer, NASA Goddard Space Flight Center
Information (1990s)	Chief Innovation Officer (CINO)	1998	Manages the process of innovation	Beth Simone Noveck, Chief Innovation Officer, State of NJ
Information (1990s)	Chief Web Officer (CWO)	1999	Oversees all internet and intranet sites	Ashley Saddul, Founder and Chief Web Officer, Recruiter.com
Data & Digital (2000s)	Chief Data and/or Analytics Officer (CDAO)	2002	Manages data and analytics assets and strategies to meet objectives	Vikram Somaya, Chief Data & Analytics Officer, PepsiCo
Data & Digital (2000s)	Chief Digital Officer (CDO)	~2010	Helps organizations use digital information and advanced technologies (e.g., the cloud, AI, machine learning, automation, IoT, and social media) to create business value	Prat Vemana, EVP and Chief Digital and Product Officer, Target
Intelligence (2020s)	Chief Artificial Intelligence Officer (CAIO)	~2021	Oversees strategy, product development, implementation and governance of AI	Nitzan Mekel-Bobrov, Chief AI Officer, eBay

NEW RULES

1. BUILDING THE CONTEMPORARY DIGITAL WORLD

REGULATION (NOT EXHAUSTIVE)	JURISDICTION/YEAR	DESCRIPTION
General Data Protection Regulation (GDPR)	EU; 2016 (law)	More control over personal data, with regard to digital platforms, services, apps, and commerce
Open App Markets Act (OAMA)	U.S.; 2021 (introduced)	Promote competition, reduce “gatekeeper power,” increase choice, reduce consumer costs in app economy
Platform Competition and Opportunity Act	U.S.; 2021 (introduced)	Heavily restrict the business or technology acquisitions by “dominant online platforms”
Digital Services Act	EU; 2022 (law)	New rules for online content moderation applying to online services including online marketplaces, app stores, video sharing platforms, and search engines
Digital Markets Act	EU; 2022 (law)	Ensures large online platforms, or “gatekeepers,” operate fairly, protect user data, and that promote competition
The American Innovation and Choice Online Act (AICOA)	U.S.; 2021 (introduced), 2023 (reintroduced)	Aims to prevent “Big Tech” companies from “self-preferencing” their own products at the expense of competitors
Algorithmic Justice and Online Platform Transparency Act	U.S.; 2021 (introduced), 2023 (reintroduced)	Ban “harmful” algorithms, hold websites accountable for content amplification and moderation practices, and commission a cross-gov. investigation into discriminatory algorithmic processes throughout the economy
National AI Commission Act	U.S.; 2023 (introduced)	Would create a commission on AI to develop a comprehensive framework for its regulation
AI Act	EU; 2023 (introduced)	Establishes obligations for AI providers and users depending on the level of risk from that AI.

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NEW RULES

2. UNDERSTANDING THE NEW RULES OF THE DIGITAL WORLD

In a business landscape where access to data is powering a new industrial revolution, the most successful contemporary leaders across the fields of innovation, business, government, and society will be ones that master the Physical *and* Digital Worlds. Because data powers both digital software, platforms, tools, and apps and decision-making, individual companies and entire industries are conducting more of their business in the Digital World.

While many factors affect an organization's success, failure, effectiveness, market power, and value, access to resources is an important factor.

Companies rooted in the Physical World control resources such as energy (oil, sunlight, water), territory (land, air, sea), currency (gold, diamonds), information (printing press, news media), and governance (nation-states, intergovernmental bodies). Rulers of the Physical World traditionally held vast sway over such "natural resources" and thus influence over society's norms and institutions.

The Digital World has parallel resources to those of the Physical World: energy (data - that fuels software, services, and decision-making), territory (computing power - data centers, the cloud, CPUs), currency (currency - Bitcoin and other cryptocurrencies, fintech services, blockchain technology), and governance (policies and procedures about cybersecurity, data privacy and other matters that determine how digital technologies are supposed to operate and interact with other digital technologies).

ELEMENT OF POWER	PHYSICAL WORLD	DIGITAL WORLD
energy	oil, sunlight, water	data
territory	land, air, underwater	CPUs
currency	gold, reserve currencies	digital currencies, fintech
information	religion, printing press, newspapers, cable news	algorithms, search results, digital news, aggregators
governance	nation-states, intergovernmental bodies	digital governance

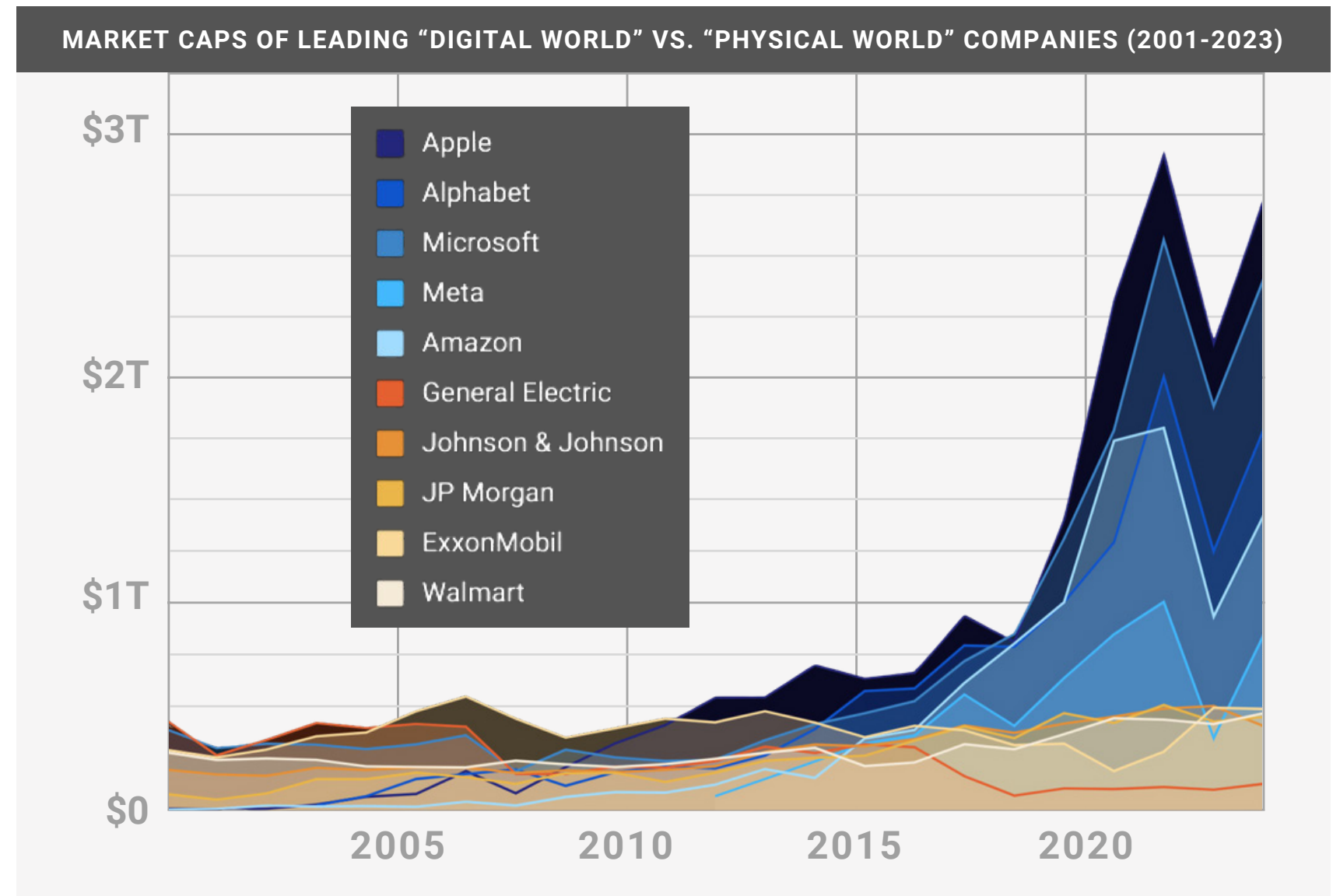
NEW RULES

2. UNDERSTANDING THE NEW RULES OF THE DIGITAL WORLD

There are many successful and valuable companies and other organizations primarily rooted in the resources of the Physical World (e.g., oil companies). That said, organizations rooted primarily in the resources of the Digital World (and accompanying human talent - e.g., software engineers) have more recently generated outsized value and influence.

We hypothesize that organizations rooted in the Digital World have become more valuable and influential precisely because people and organizations have steadily transitioned more and more of our resources (time, data, communications, etc.) out of the Physical World and into the Digital one. While the Physical World is constrained to a limited amount of physical resources, the Digital World is not limited in anything close to the same way.

Previously, the most valuable companies in the world were those that harnessed natural resources and transformed them into things like oil, electricity, automobiles, medication, and soap. Now, the most valuable companies are those that control laptops, phones, data storage, cloud computing, processing power, and social media content.



NEW RULES

2. UNDERSTANDING THE NEW RULES OF THE DIGITAL WORLD

THE DOW JONES INDUSTRIAL AVERAGE IN THE DIGITAL AGE: SELECT REMOVALS AND ADDITIONS

YEAR	REMOVED FROM DOW	ADDED TO DOW
2020	ExxonMobil ▼	▲ Salesforce
2015	AT&T ▼	▲ Apple
2009	GM ▼	▲ Cisco
1999	Chevron ▼	▲ Microsoft
1999	Goodyear ▼	▲ Intel

While it is a somewhat arbitrary index run by a private company (S&P Dow Jones Indices), the 30 companies in the prestigious “blue chip” Dow Jones Industrial Average (DJIA) serve as a guide to the times we live in. In the digital age (roughly the last 25 years), large Digital World companies have gradually replaced prominent Physical World companies in the DJIA.

This doesn’t mean that there aren’t Physical World companies in the Dow (there are) and it doesn’t mean that the companies that were removed are failures (ExxonMobil stock has more than tripled since a low point in 2020). However, it represents an influential view that gradually favors investing in more digital companies. (The SPDR Dow Jones Industrial Average ETF Trust, or “DIA,” which tracks the performance of the DJIA, has nearly \$30 billion invested in it alone.) It’s not so much that Physical World companies have lost value; it’s that Digital World companies control vast resources that contain relatively more value and, in turn, power exponential corporate growth.

We are currently at an inflection point, a period of dramatic change, as the world becomes increasingly digital. (Just witness the frenzy of news reports, statements from members of Congress, and free online tools stemming from sudden developments in artificial intelligence (AI) in 2023.) This inflection point has tremendous ramifications across innovation, business, regulation & law, and society at large. In turn, this dynamic, complex landscape presents leaders with both new risks to mitigate and new opportunities to harness. Leaders need to understand the new rules for this dynamic in the middle of it happening - building the plane while flying it, if you will.

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NEW RULES

3. THREATS AND OPPORTUNITIES OF THE DIGITAL WORLD

Contemporary society now straddles two worlds: The Physical World we were born and raised in and a Digital World of code, software, data, and automation we have created for ourselves to augment our reality. The much newer Digital World that humans created has generated tremendous opportunities and value, ranging from more efficient human connection (reuniting with old classmates, video collaboration, dating apps) to serious, data-driven business (small business e-commerce, optimizing inventory, automating repetitive tasks, tracking complex international supply chains).

More generally, the opportunities available in and from the Digital World are familiar to leaders: increased cost savings, more efficient supply chain management, better customer experiences, a more “innovative” brand, and so on. But they are not without a cost.

PHYSICAL WORLD	DIGITAL WORLD	EXEMPLAR
Listening to music on a record, tape, or CD	Listening to digital streaming music	Spotify
Discovering a potential date at a bar, concert, church, etc.	Discovering a potential date by browsing on an app	Tinder
Submitting paper receipts for expenses	Submitting digital receipts	Expensify
Mailing your tax forms to the IRS’s P.O. Box	Filing your taxes online	TurboTax
Signing contracts with a pen	Signing PDF contracts securely in a browser	DocuSign
Creating a will in a lawyer’s office	Creating a will online	Trust & Will
Calling a stock broker to buy shares in a company	Buying stock shares through an online account or app	Robinhood
Going to an office to see a professional therapist	Logging into an online therapy service	BetterHelp
Placing a legal wager on a sports game at a physical casino sportsbook	Placing a wager digitally through a regulated and legal sportsbook app	FanDuel
Low-wage workers preparing “fast food” for customers	Automated robots preparing fries and dispensing drinks	Miso Robotics

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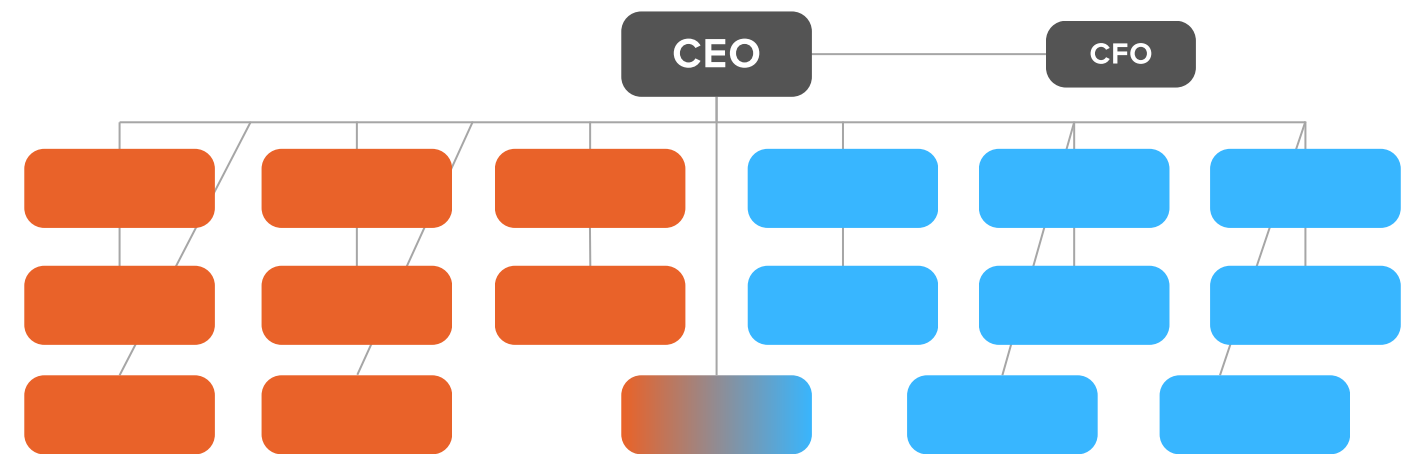
3. THREATS AND OPPORTUNITIES OF THE DIGITAL WORLD

Beyond new opportunities, the Digital World's new rules also mean that leaders across all industries (whether they fully realize it or not) face a spectrum of new threats to navigate and mitigate. These include cyber vulnerabilities, privacy issues, intellectual property considerations, changing workforce needs, and an ever-evolving regulatory environment.

Most threats should be at least somewhat predictable to leaders and strategists and specialized consultants. That said, the Digital World evolves rapidly, almost constantly changing the threat and opportunity landscape. In the last few years, novel situations at the intersection of innovation, business, government, and society have arisen that require entirely new considerations: social media misinformation swaying elections; self-driving cars killing pedestrians; Congress and the news media seriously considering 'Terminator' movie-style scenarios tied to the rise of artificial intelligence.

Innovators create new digital opportunities, society utilizes them, and governments regulate potential societal risks. However, contemporary business leaders straddle new opportunities and threats, attempting to create a balance between them that maximizes the value of their companies and offerings. This applies to companies of all sizes, from small manufacturers, retailers, and consultants to multinational corporations.

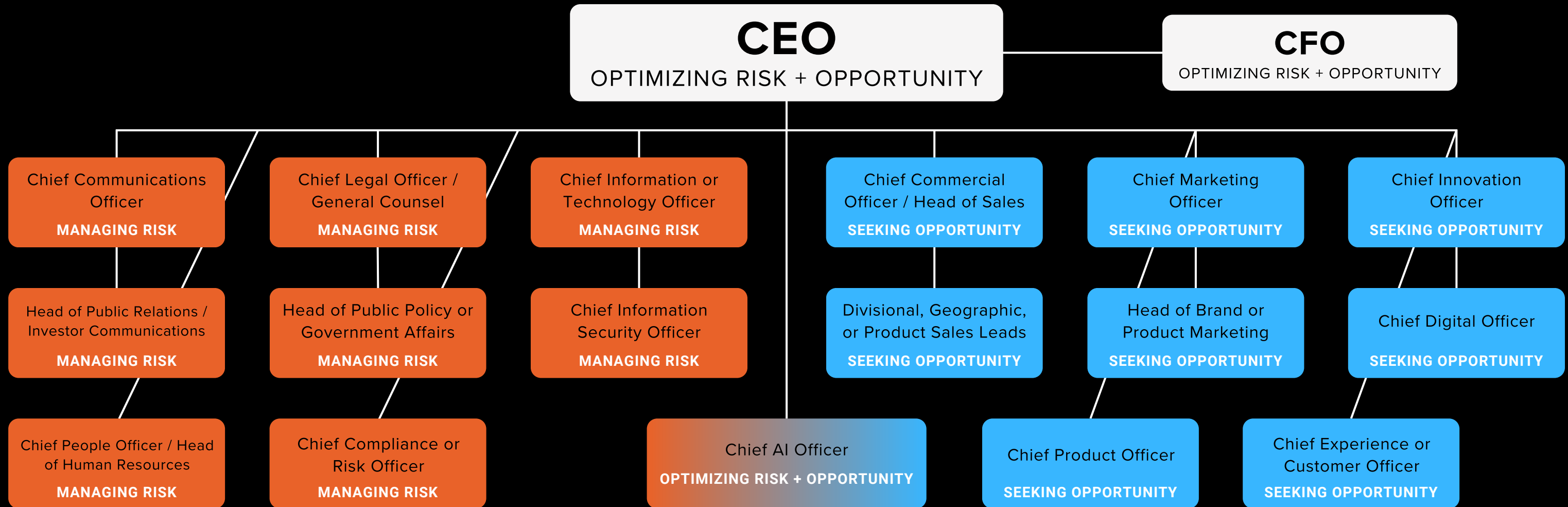
As more time and value are invested in the Digital World, the people responsible for assessing, mitigating, and otherwise dealing with threats (public affairs, government affairs, legal, communications, corporate social responsibility) and those working on opportunities (research and development, operations, marketing, sales, innovation) need to break down silos and work in lockstep to discuss issues about Digital World initiatives on the backdrop of a complex landscape. CEOs and board members subsequently need to integrate all of this information and make decisions about it.



*The contemporary corporate org chart incorporates Digital World-specific roles responsible for playing both “**defense**” and “**offense**.” See next page for more details.*

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3. THREATS AND OPPORTUNITIES OF THE DIGITAL WORLD



“BLINDSIDE CREW” - PLAYS DEFENSE AND MITIGATES THE COMPANY’S RISK

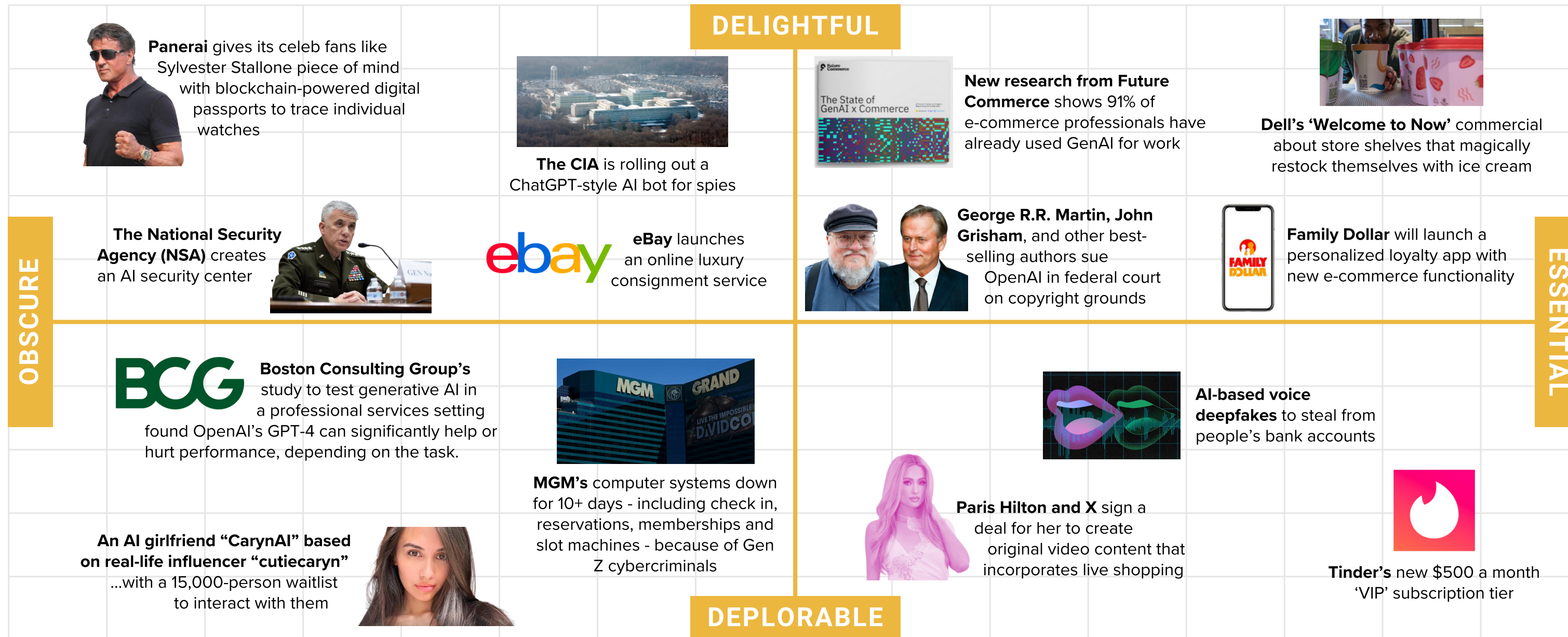
“OPPORTUNITY CREW” - PLAYS OFFENSE AND FINDS NEW OPPORTUNITIES TO CAPITALIZE ON

THE SHIFT



POWER MATRIX

WHO'S UP AND WHO'S DOWN IN THE DIGITAL WORLD



RECOMMENDED READING

FROM THE DATA CATALYST INSTITUTE:

- **Digitally Driven** (2020) - This research report describes how businesses relied on digital tools and platforms as a “safety net” during the COVID-19 pandemic.
- **Super Selling** (2021) - This research report describes how contemporary businesses reach customers and sell physical goods using innovations from the digital world.
- **How Populist Antitrust Legislation Would Harm the U.S. Tech Startup Ecosystem** (2022) - This white paper captures the economic complexity of the 2020s tug-of-war between U.S. innovators & entrepreneurs and lawmakers & regulators.
- **Maximum Impact** (2023) - This report describes how the modern digital advertising marketplace is a massive “force multiplier” for smaller businesses aiming to sell and compete.

FROM THE POWER MATRIX:

- **Dell Technologies TV Spot, 'Shelves'**
iSpot.tv (May 30, 2023)
- **Voice Deepfakes Are Coming for Your Bank Balance**
New York Times (August 8, 2023)
- **Forget Box and Papers. Panerai Is Launching Digital Passports to Trace Its Watches.**
Robb Report (Sept. 13, 2023)
- **More than a dozen authors, including John Grisham and George R.R. Martin, sue ChatGPT**
NBC News (Sept. 21, 2023)
- **Will Family Dollar's New App Solidify the Loyalty of Shoppers Who Traded Down?**
RetailWire (Oct. 2, 2023)

About *THE SHIFT* by DCI

The 20th century's rules weren't designed for the 21st-century disruption underlying today's monumental shifts in innovation, business, government, and society. Whether you're the disruptor or the disrupted, you need to decode headlines and trends, map power players behind key decisions, and visualize the interlocking systems of power that define how things really work.

THE SHIFT by DCI reads between today's headlines to deliver intelligence that changes the equation and helps professionals mitigate risk and drive growth. We apply systems thinking, hypothesis testing, and narratives about power players to translate what's happening into actionable insights. *THE SHIFT* is a compliment to your habitual news intake that helps you visualize, react to, and anticipate threats and opportunities that are shaping the future. For more information, send an email to editor@datacatalyst.org.

About the **Data Catalyst Institute (DCI)**

You operate in a world in which data is the most important commodity, in which the digital realm has become more important than the physical one, in which disruption is the rule and not the exception. A world in which influencers must be understood, opinions and perceptions are being shaped, and innovation, market, and regulatory landscapes are constantly shifting. A world in which risks and opportunities seem obvious...until they aren't. And you have zero room for error.

In an era of global turbulence and uncertainty, professionals need access to multidisciplinary intelligence and expertise that helps them navigate significant technological, economic, political, and societal change. DCI analyses complex battles at the intersection of innovation, business, the law, and public opinion by synthesizing insights from original research and our unique community of academics, analysts, and practitioners. Leaders use DCI's intelligence and experts to "see around corners" when they need novel solutions to complex situations involving minimizing risk and maximizing opportunities.

DCI is part of the RXN Group.

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