



CXO FOCUS

# DATA SCIENCE TRANSITIONS BUSINESSES TO EXPONENTIAL GROWTH

A DATA SCIENCE STRATEGY UNDERPINS HYPER-AUTOMATION  
AND THE COMPOSABLE BUSINESS

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OCTOBER 2022



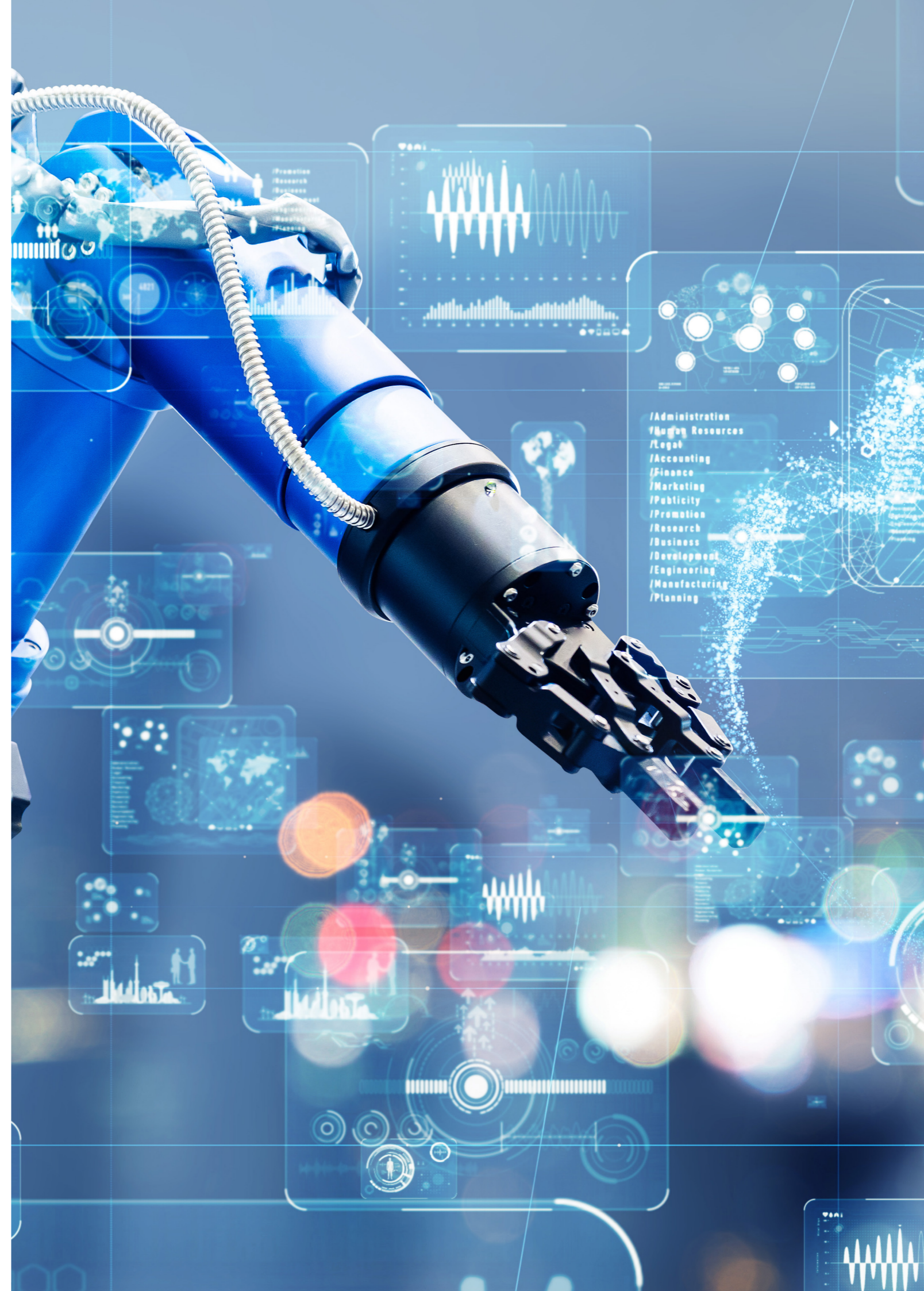
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Without data science and a strategic data mindset, organizations will not be able to compete in disrupted markets.

As the pace of digital innovation increases, organizations need a data science strategy that enables hyper-automation and experimentation and ultimately leads to business growth.

“Disruption occurs when it meets the right conditions, but that will not be a perfect scenario; it is like private equity (PE); not every company makes it,” says Dr. Art Langer. Dr. Langer is Vice

Chair of Faculty and Executive Advisor to the Dean at Columbia University. He adds that organizations can, just like PE, ensure more ideas, products, and services do meet the right conditions through the use of data science. Academics Dr. Langer and Dr. Arka Mukherjee both believe that a data science strategy is essential if organizations are to survive and thrive in the age of digital disruption.



```
printf("Enter a three digit integer\n");
scanf("%d", &num);
originalNum = num;
while (originalNum != 0) {
    remainder = originalNum % 10;
    result += remainder * remainder;
    originalNum /= 10;
}
printf("The sum of the squares of the digits is: %d\n", result);

int main() {
    int num, orig;
    printf("Enter a three digit integer\n");
    scanf("%d", &num);
    originalNum = num;
    while (originalNum != 0) {
        remainder = originalNum % 10;
        result += remainder * remainder;
        originalNum /= 10;
    }
    printf("The sum of the squares of the digits is: %d\n", result);
}
```

Traditionally the S curve model gave an organization a two to three years advantage. However, digitization has shrunk the S curve. "We are conditioned to think of our growth in very linear terms," says Dr. Mukherjee, a member of the Center for Technology Management at Columbia. Dr. Mukherjee says digitization has created companies that undergo exponential growth, which is hockey stick shaped instead of an S curve. "Data allows a firm to move from linear growth to exponential growth. Ten years ago, there were no firms with one billion customers, now that is common, and those organizations have done that by moving onto the exponential growth curve. Amazon is a classic example," he says. "All of this is about the data, not the applications," adds Dr. Langer.

Dr. Langer adds the case of the mobility-as-a-service business Uber. "Uber took a smartphone, Google maps, and they changed the world. The significance is that they don't own any hardware or software; it is about partnering and controlling the data." Dr. Mukherjee agrees: "There is a massive opportunity in the market to have an early advantage and to position themselves to be a winner; data can establish market dominance."

What has allowed Amazon and Uber to seize the advantage is a data mindset. "The business mindset has been process dominated since the 1990s."

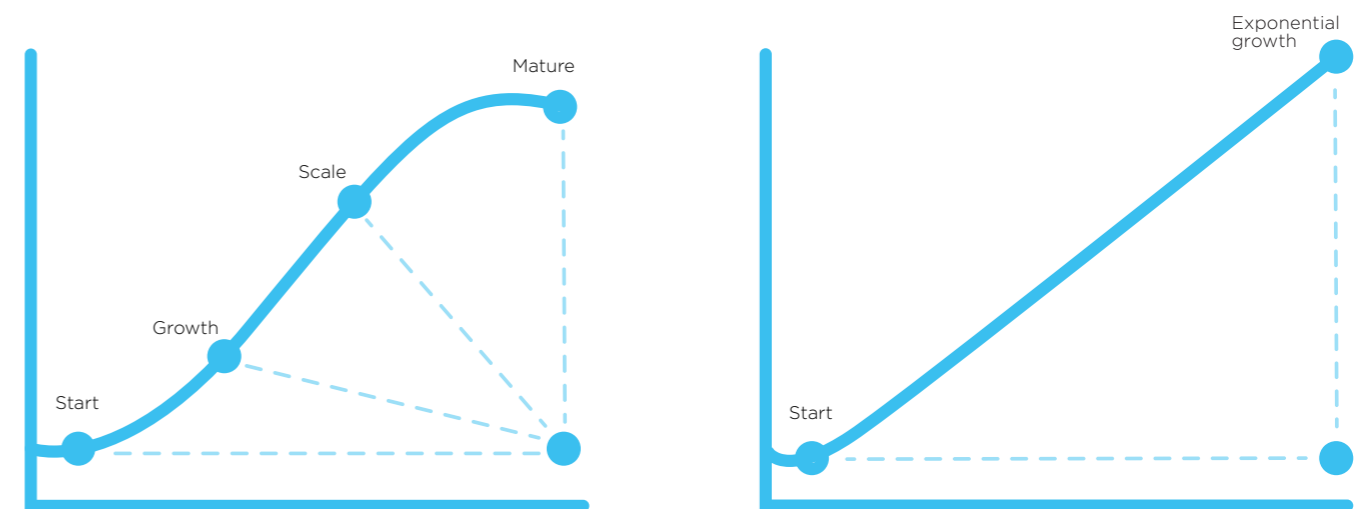


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There is fear in the boardroom. Their main question is: 'how can we anticipate the unexpected threats brought on by technology advances,' Dr. Langer says. The Columbia University academic uses a sports analogy to describe modern business where innovation has to be a constant, but the team needs a good 'batting average of success. "Data and data science will help you improve the batting average of your business."

Traditional business thinking has described business growth as an S-shaped curve where the lower end of the S represents high demand and low supply fostering that demand, which is also the time when a new business or service is at the highest risk. The bottom end of the curve is also when

organizations can seize the greatest market share, Dr. Langer says. As an organization succeeds, it reaches the middle of the S curve, which is typically where supply and demand are equal, there is competition in the market, and the product or service is no longer an innovation but a commodity. "The competitive aspect of having the product is probably lost, so you have to focus on efficiencies, outsourcing, low prices, and tight margins," Dr. Langer says. Alternatively, organizations need to innovate to be back at the lower end of the S curve. An example of failure to move back to the beginning of the S curve is the mobile telecommunications firm Nokia; according to Dr. Langer, the Scandinavian firm lost 76% of its market as it didn't identify the smartphone business opportunity.





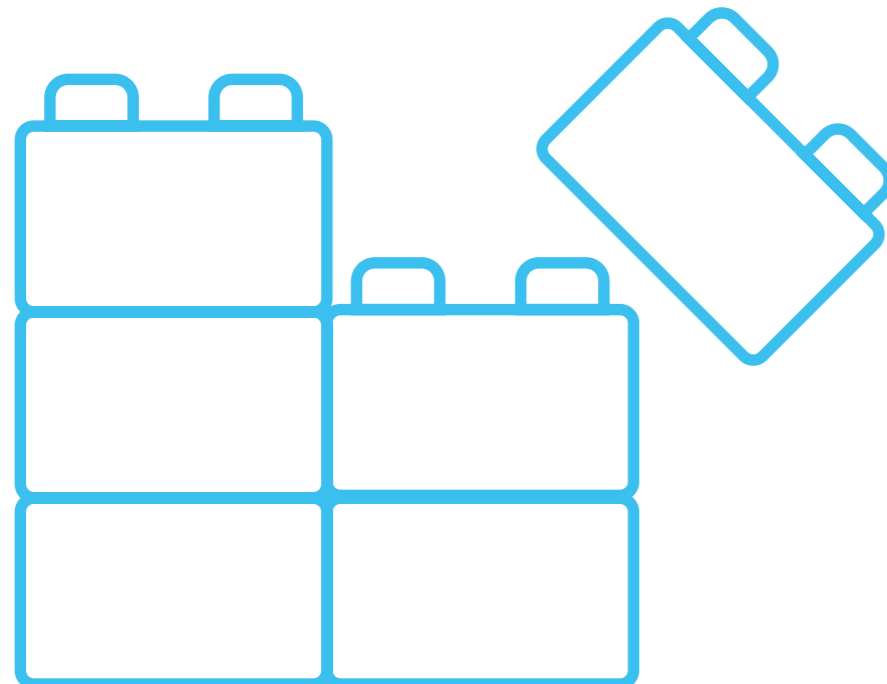
Organisations need to create a large collection of data services that have granular functionality, like pieces of Lego.

## Play with Lego

Organizations with a data mindset have an underlying data layer to the business; the technology, products, and services are then above this as a series of components, Dr. Mukherjee says. “Organisations need to create a large collection of data services that have granular functionality, like pieces of Lego. Each Lego piece is part of the overall business, product, or service. Then with the use of No Code

or Low Code, you can stitch all these bricks together. Many organizations are doing this to achieve scale. This is the composable business.

“This creates velocity. If you have the microservices, you will lead and be able to go to market first and drive competitive advantage,” Dr. Mukherjee says.



With this approach in place, Dr. Mukherjee says organizations can then hyper automate their business processes, which frees up resources to continue innovating. To hyper-automate, organizations need to break the business down into the value proposition, understanding of the customer, and capabilities and then automate these wherever possible. “At the end of the day, there is a series of processes that do not need humans, which impact the velocity and cost,” he says.

Hyper-automation also standardizes organizations, Dr. Mukherjee says: “There is a huge amount of resistance inside the systems we have, which comes from inconsistency in standards and the data. Hyper automation forces standards onto the organization.” He adds that the ability to operate the organization remotely is increased. Organizations with high levels of automation performed better during the Covid-19 pandemic than those relying on manual processes.



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For every organization, there is a matrix of systems, customer journeys, and platforms. Dr. Mukherjee says a systematic view of the organization allows CXOs to see what can be hyper-automated. As an organization becomes hyper-automated, further levels of automation can be adopted, Dr. Mukherjee says, such as autonomous functions that self-heal if there is an issue or are event-driven by other automation within the organization. “Data is in the middle of the hyper-automation journey,” he says.

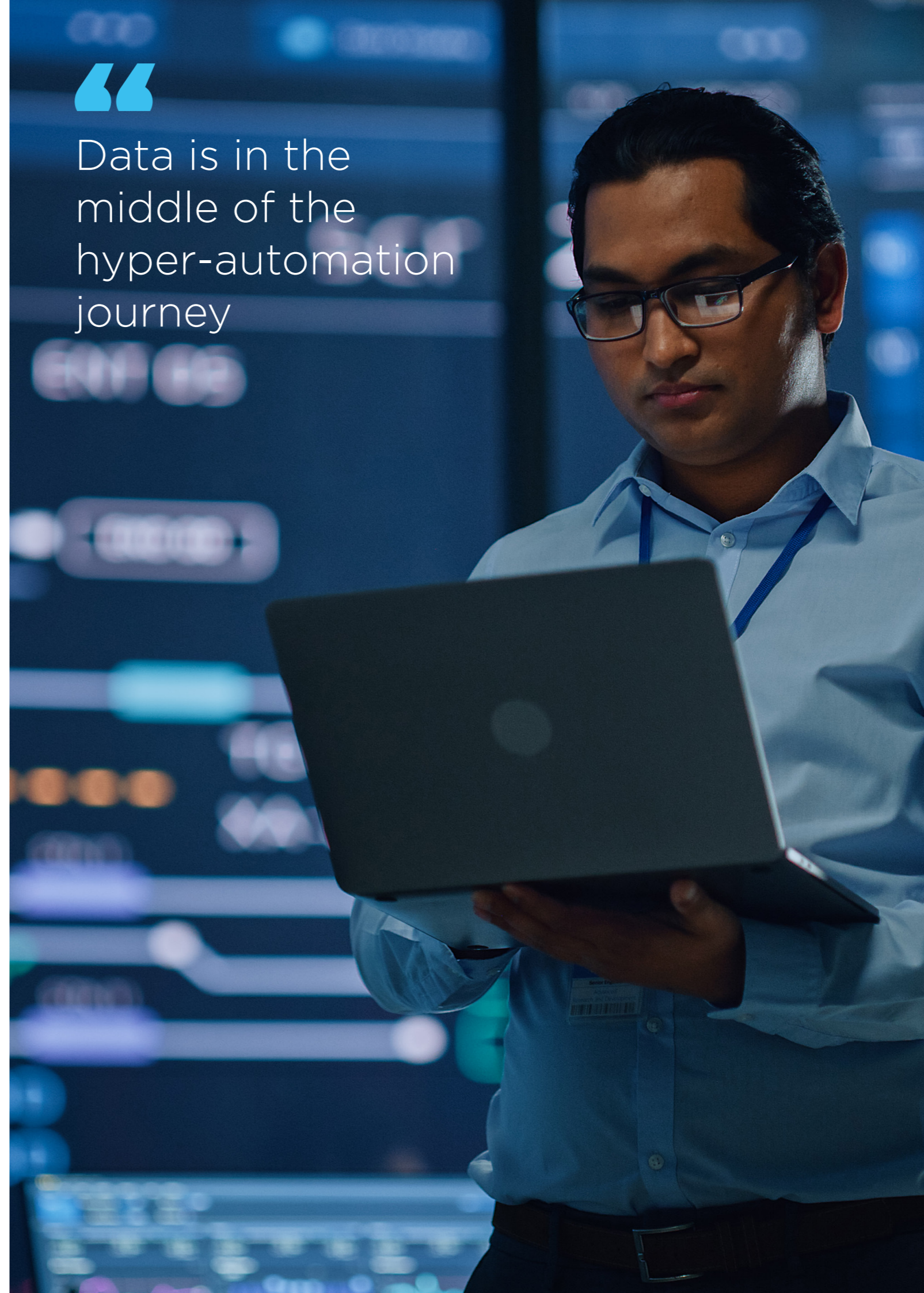
Across engineering and manufacturing, CXOs are developing digital twins of their organizations to identify efficiencies

and opportunities for automation; Dr. Mukherjee says all vertical markets should be developing digital twins in order to discover innovations and savings. “Imagine the digital twin of your organization, one that does everything digitally. In the market, who would win, you or the digital twin? The digital twin will obviously win, so the question is, what are you waiting for? If you don’t, somebody else will.”

Both academics and former CXOs say business and technology leaders should begin by developing a minimum viable product (MVP) of the data fabric, automation, and composable business components in order to move to a strategic data mindset.



Data is in the middle of the hyper-automation journey





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