High-Tech Industry

ADAPTATION IS SECOND NATURE

Organizational adaptability in the context of market reinvention through high tech

Inceptra

DS DASSAULT SYSTEMES

? WHY

Learn how to recognize
threats and opportunities
driving fundamental
changes that affect today's
high-tech companies

? WHAT

Discover key concepts
high-tech companies
can leverage to manage
transformational change for
the purpose of innovation

? HOW

Explore practices of how
high-tech innovators can
strengthen their ability
to adapt to fundamental
change

MEET OUR EXPERTS

Neno HORVAT

Neno has been in the electronics and software industries in various sales, product management and marketing roles over the last 25 years. His experience has given him exposure to significant changes in the market, including business models and digital marketing.

He joined Dassault Systèmes in 2010 and is currently Marketing Director, High-Tech Industry.

Louis FEINSTEIN

Louis has been involved in R&D and engineering leadership at some of the biggest names in high tech for 30 years, witnessing firsthand how disruption affects these brands. He has also been engaged with small- and medium-sized technology players.

Louis has been with Dassault Systèmes for over six years and is currently Global Director, High-Tech Sales.

Mahesh DESHPANDE

Mahesh has 23 years' experience in R&D, business development and product innovation. He has consulted for leading global brands in, among others, the telecommunications, consumer electronics and home appliance industries.

He is a digital transformation evangelist and currently leads Dassault Systèmes' business consulting practice in the high-tech industry.

THE QUICKENING PACE
OF INNOVATION

Transformative innovations have a long history in humanity and they span across political, societal, scientific and technology-driven revolutions. According to The Atlantic, in The 50 Greatest Breakthroughs Since the Wheel, there is a distinct fundamental transformation that is increasingly being driven by high technology and that the pace of this transformation is accelerating. Indeed, the article reveals that over a third of all the innovations achieved in the past 2,000 years occurred in the last 200 years.

While the emergence of high tech in the last century accounts for a third of all fundamental innovations, it has substantially evolved 70% of all innovations – and continues to do so.

We see technology opening new dimensions for fundamental market reinventions, such as global digital networks, quantum and bio computing, artificial intelligence, virtualization and advanced energy storage. The fundamental changes to the market that we see happening is occurring at the speed of creating lines of software code. Today, biotechnology and "Smart X" (be it mobility, cities, factories) are all high-tech enabled, creating new connected experiences transforming the way people socialize, move, consume and work. At the same time, high tech is fundamentally changing marketing, customer user experience, financing, operations, manufacturing, delivery and more.
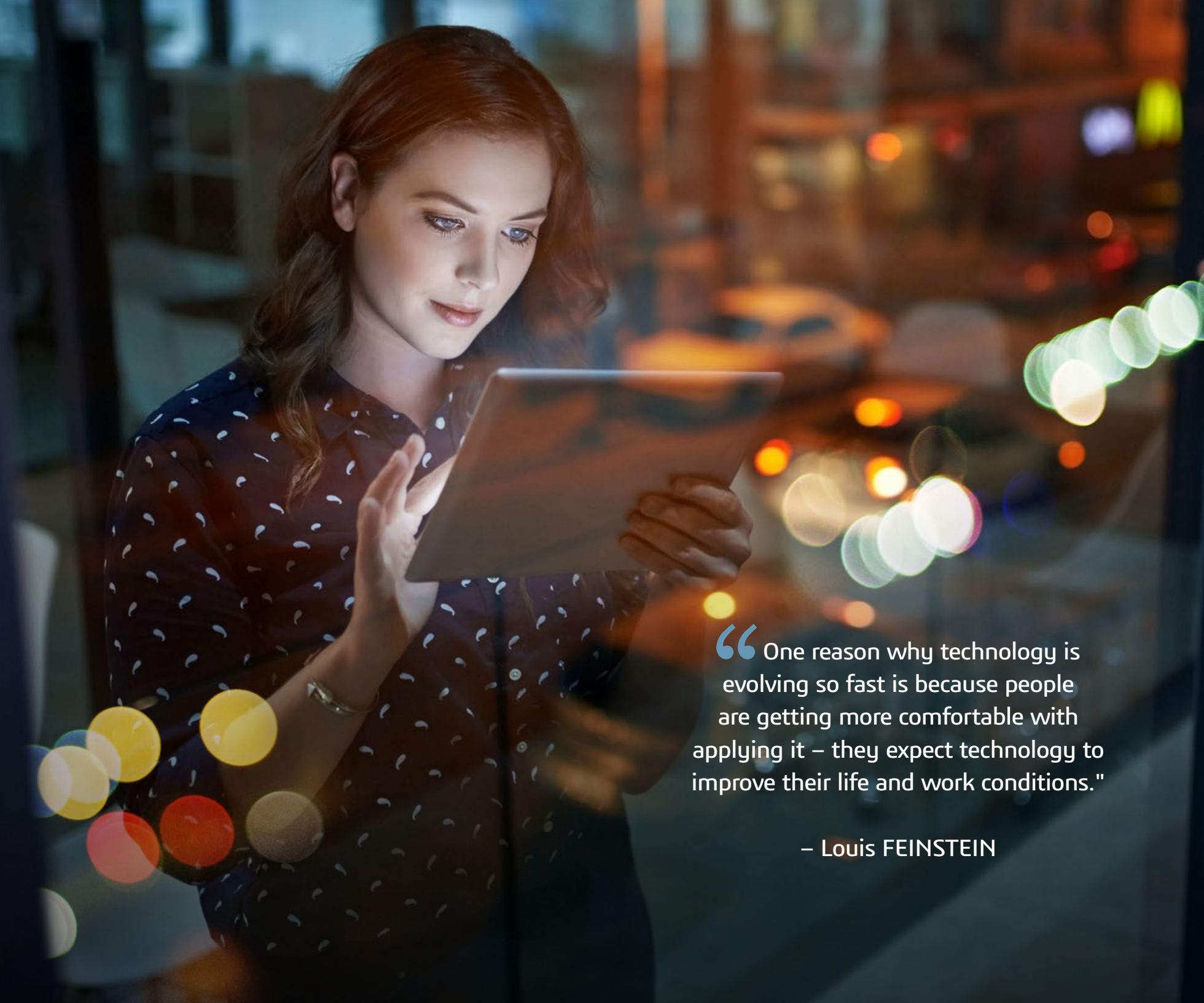
With this change comes the need to think bigger. The stakes are higher now; the ecosystem is changing more quickly. Companies must figure out how to ride the wave or be flooded. But how? It takes a certain kind of company, one that, with adaptive capabilities, will be able to master change.

We will now see why adaptation must become second nature for high-tech innovators.

"One reason why technology is evolving so fast is because people are getting more comfortable with applying it – they expect technology to improve their life and work conditions."

– Louis FEINSTEIN

THE NEED FOR HOLISTIC APPROACHES TO ADAPTATION

" The digital age rewards change and punishes stasis. Companies must be open to radical reinvention to find new, significant and sustainable sources of revenue."

– Peter DAHLSTRÖM, Liz ERICSON, Somesh KHANNA, and Jürgen MEFFERT, McKinsey & Company

The McKinsey team delved into the world of reinvention to discover what works, and what doesn't. For one, they found that **reinvention requires companies to completely rethink business.** To drive the point home, they are emphatic that this is not merely altering what already works. "Digitizing existing processes," they added, "is not the same as reinvention."

Instead, the team proposes what they term the 4Ds of digital transformation, which are:

- **Discover**
  In the Discover stage, companies shape digital ambition, strategy and business case based on insights.

- **Design**
  Then, they Design by reinventing and prototyping new capabilities and breakthrough journeys – creating a new experience – as part of their transformation program.

- **Deliver**
  When it comes time to Deliver, companies activate an ecosystem to rapidly deliver what they've designed at scale.

- **De-risk**
  Continuous optimization takes place throughout the De-risk stage, where they structure the transformation program, resources and commercial model to reduce operational and financial risk.

OPEN INNOVATION FUELS THE 4DS
OF DIGITAL TRANSFORMATION

"Open Innovation", as termed in 2003 by Henry Chesbrough, professor and executive director of the Program in Open Innovation at the University of California at Berkeley, involves pooling tools or platforms to share ideas and stimulate innovation.

According to Martin Duval, President and COO of Bluenove, a firm that consults in and delivers services in Open Innovation, there are five trends of Open Innovation that companies will need to strategize for in the future if they want to effect transformation:

- **Merging in-house and external projects**
  Innovators can expect their internal innovation team to work closely with a group of external partners to generate new ideas and validate internal ideas.

- **Co-creation process**
  Partners in the value network will work online and offline to develop new service and product concepts more efficiently.

- **Emergence of meta-challenges and contests**
  Non-competitor companies will turn to contests to generate ideas, solve challenges and spread risks and costs with partners in the value network.

- **Idea management processes**
  Relationships in the value network will become more clearly defined to identify which participants are key contributors, with the subsequent appropriate rewards and incentives carefully selected for these participants.

- **Stronger cross-industry collaboration**
  Companies and institutions will join forces with partners outside their industry to create complex collaborations to address issues like technology acceleration, sustainable development and globalization. Such collaborations will likely result in innovations that disrupt the market.

As innovative, high-tech companies seek to build bridges between themselves and partners in the value network, these partners will seek, develop and deliver new products and solutions that will disrupt the market. What they'll need is the right platform to bring everyone together to collaborate.

BREAKING THE BOTTLENECKS

In Harvard Business Review, research by Barrett Ersek, Eileen Weisenbach Keller and John Mullins led them to discover that just about every "not business as usual" innovation succeeded because it directly addressed at least one of five business bottlenecks. Innovators should:

- **Remove out-of-date buying or customer behavior**
  The old way of customer experience formats are more likely than not to have bottlenecks. Familiarity with these formats cause customers not to question them, and if innovators don't hear from customers, they can't change. An innovator should proactively map their customer experience and eliminate steps that hinder the experience — especially repetitive steps.

- **Remove a big, redundant cost category**
  What is a major cost category common to companies in your industry that can be eliminated? For example, eliminating the need for brick-and-mortar shops to sell products helps retailers. The authors encourage innovators to look to other industries to discern how they sell products in new, cost-effective ways.

- **Remove considerable financial risks for customers**
  Companies can also look into offering new pricing models that ease customers into purchasing their products and/or services. However, these are easily copied by competitors — so don't expect this advantage to last for long — but it may just give you enough time for customers to buy into your product experience.

- **Remove impediments to staff motivation**
  Whilst it's good that companies transform their approach to customer engagement, they tend to gloss over employee engagement. By focusing on improved hiring and retention strategies and actions, innovators can both motivate employees and retain them — yet another cost saving as talent acquisition and training are costly, especially when scaled to large companies.
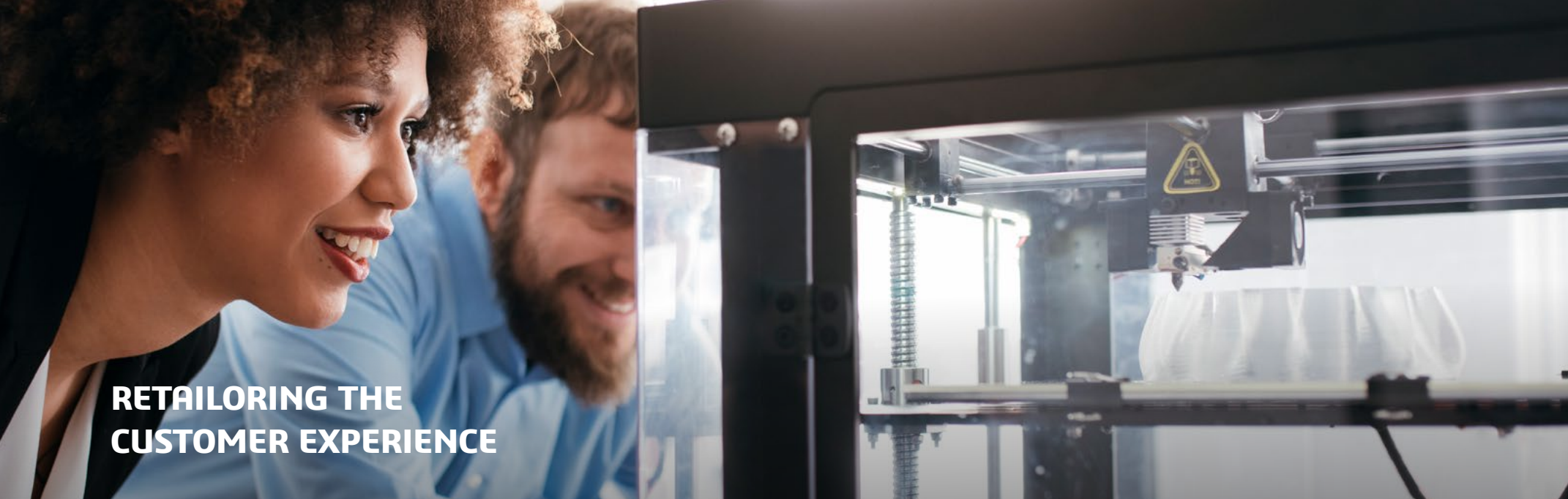
- **Remove harmful side effects of products and services**
  Gain a competitive advantage by streamlining your value network or changing a product's composition. Attentive innovators are able to not only eliminate harmful side effects from a product; they can also persuade consumers to switch to their products and services.

RETAILORING THE CUSTOMER EXPERIENCE

"The high-tech industry is characterized by high competition, so you can't miss any aspect in optimizing the customer experience. From product discovery over purchasing to unboxing, initialization and experience sharing – every touch point is crucial and can make the difference. And today, experiences are dynamic, unique and mainly digital, driven by software and content," says Neno.

"I agree. And the reinventions are going to happen within a connected ecosystem of products, software and services that bring in a larger, combined solution. The notion of a product is changing from an individual, functional one to a cohesive experience," Mahesh adds.

"That's right, Mahesh," answers Louis. "Customer expectations are evolving. And we are applying technology much faster, because people are more comfortable with technology today than they've ever been in the entire history of mankind, so people really expect technology to improve their everyday life and work experience.

"The new point is that smart, connected products can dramatically reduce the distance between customers and manufacturers, and information intelligence can substantially increase the understanding on how a product characteristic or function is being used and perceived."

"I perfectly agree, Louis. And we see strong shifts in the pre-purchasing phase too: The digitization of the last 30 years has led to mass advertising and a superabundance of touch points for existing and potential customers. This is why the creation of compelling universes for solution discovery and exploration is key. Those touch points can even become places for customer engagement before the actual product exists," Neno continues.

To effectively retailor the customer experience, high-tech companies need to be:

- **Fast** and **efficient** in utilizing digital integration to reduce the distance to customers.
- **Comprehensive**, by listening closely to a variety of voices on the value network.
- **Impactful**, through meaningful and consistent engagement with customers.

AXING COST CATEGORIES

Reducing cost and risk in developing high-tech products is particularly challenging because the customer experience is composed of a complex mix of hardware, software, services and content.

"High-tech companies will try to eliminate such risks as early as possible in product development stages, but how can you do that? One way is to validate concepts in the early stages of your product creation. That's why you need to be able to simulate the product experience before you commit to production," says Louis.

"I agree, Louis; and to add, the value of the software systems in a product is now substantial. Today, companies are asking themselves how to convert hardware systems into equivalent software systems. So while the role of hardware is still critical — because it's where the physical thing does its job — it's actually the Systems on Chip (SOCs) that are connecting the sensors and ultimately manifesting product behavior."

"When customer requirements change, you'll have to know how to propagate them around to your value network participants. This is where a single platform comes in handy as you have complete visibility and the ability to have an intelligent view on where the impacts and changes might occur," answers Mahesh.

"A shift to digitally integrate the supply network will create so much more information for companies. The demand plans, supply capability plans, schedules, manufacturing specifications, logistics specifications — it's all data which, when harnessed as a service, becomes a very powerful element of the strategy. The better visibility and traceability of any changes you have, the more adaptive you are to quickly respond to them.

In an industry where margins are usually razor-thin, innovators need to reduce risk of failure and continuously optimize the top and bottom lines.

To axe cost categories by reducing risk of product failure, the digital integration of the New Product Introduction (NPI) teams enables early validation and fast realization of successful concepts. The seamless digital integration of the value network provides the agility to drive down manufacturing cost in serving global markets.

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ELIMINATING CUSTOMER RISK

"The Internet of Everything (IoE) provides unprecedented conditions for new service and risk-sharing models," Neno says, adding, "We are seeing the transformational impact on how financial risk can be removed from customers in numerous examples. Cloud-based services remove the financial risk with respect to owning information technology (IT), and the emergence of new transportation and mobility services is about to change vehicle ownership models.

"Extending the options, one could imagine a drone delivery service financed by ads, traffic monitoring or surveillance services. Or you could imagine guaranteeing zero service downtime for that drone service thanks to automated battery charge and predictive maintenance."

"I like that example, Neno," Mahesh says.

"In order to bring these business models to life, innovators need to perfectly master the complexity of their systems so that new functions, fixes or content can be implemented quickly and fault-free. Only a realistic virtual prototype of the product, with all its characteristics and behaviors modeled, can provide those capabilities. It enables the NPI team to define, simulate and validate new functions — at the speed, cost and quality required to successfully compete in today's dynamic markets."

"That's correct Mahesh," Louis comments. "And Model Based Systems Engineering is the methodology known to deliver the virtual prototype needed. At the same time, it enables building effective modular strategies, accelerates multi-discipline collaboration and helps drive risk reduction strategies before and after a product or service is launched. The efficient management of electronics and software is a key competency in this regard. It's because these domains provide the strongest lever in reducing customer risk categories through better performance, new services and content.

"Likewise, to reduce costs, the requirements related to customer risk elimination have to be defined correctly and efficiently. They also need to be traceable through the processes of system architecture, functional allocation, detailed design and, finally, validation and verification," he adds.

Innovators need to ask themselves: Do they currently have the engineering methods in place to master the complexities of new business models that can eliminate customer risk categories?

The following pages will explain how companies can adapt to deliver innovation for — or in — reinvented marketplaces. Three key areas will be outlined.

- **Adapting the way we engage with our customer**

- **Adapting the way we design and engineer products**

- **Adapting the way we orchestrate our value network**

ADAPTING THE WAY WE ENGAGE WITH CUSTOMERS

While much of high-tech innovation still resides on tightly knit circles of experts or even bright individuals, companies are looking to leverage the power of broad, diverse groups or even the "crowd" — an expression for a large, open, informal mass of contributors.

The inclusion of actual customers in the early stages of product development used to be slow and risky, often for confidentiality reasons and to avoid taking the wrong direction due to preconceptions and a low statistical basis.

Also, the validation of defined ideas is still often done face-to-face, with a closed set of biased people who, in many cases, have to take decisions based on descriptions and designs that can produce false assumptions.

So it's no surprise that online communities are in style, as they are fast, secure and affordable. We got used to these platforms and they can serve innovators very well, providing them with an additional channel for interacting with customers and partners in order to gather more unbiased and diverse feedback.

Using social functions and intelligent analytics with what-if scenarios, social ideation helps innovators to extend the perimeter of innovation and explore infinite new ways to get relevant customer perceptions on the radar and better understand them.

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The power of 3D is a great asset in this context as it helps innovators get relevant feedback in the early stages using realistic designs with customers. These review environments can show dynamic behaviors and even provide one-to-one scale virtual reality (VR) experiences. That's how they can trigger meaningful feedback from customers more easily. It's now possible to participate in real time, from anywhere in the world.

Eventually, innovators can invite customers to even co-design new products. Such a level of engagement can transform the customer relationship fundamentally, opening the innovation territory and fostering loyalty in exploring new ways of value delivery.

The other crucial phases when customer engagement can be transformed are discovery, exploration and sales. Buying attention and multiplying communication channels are both becoming less and less effective in our increasingly overcrowded digital media spaces. Leveraging the power of 3D with lifelike, interactive media is a new wave for differentiating from the crowd and inspiring audiences while providing a consistent buyer journey.
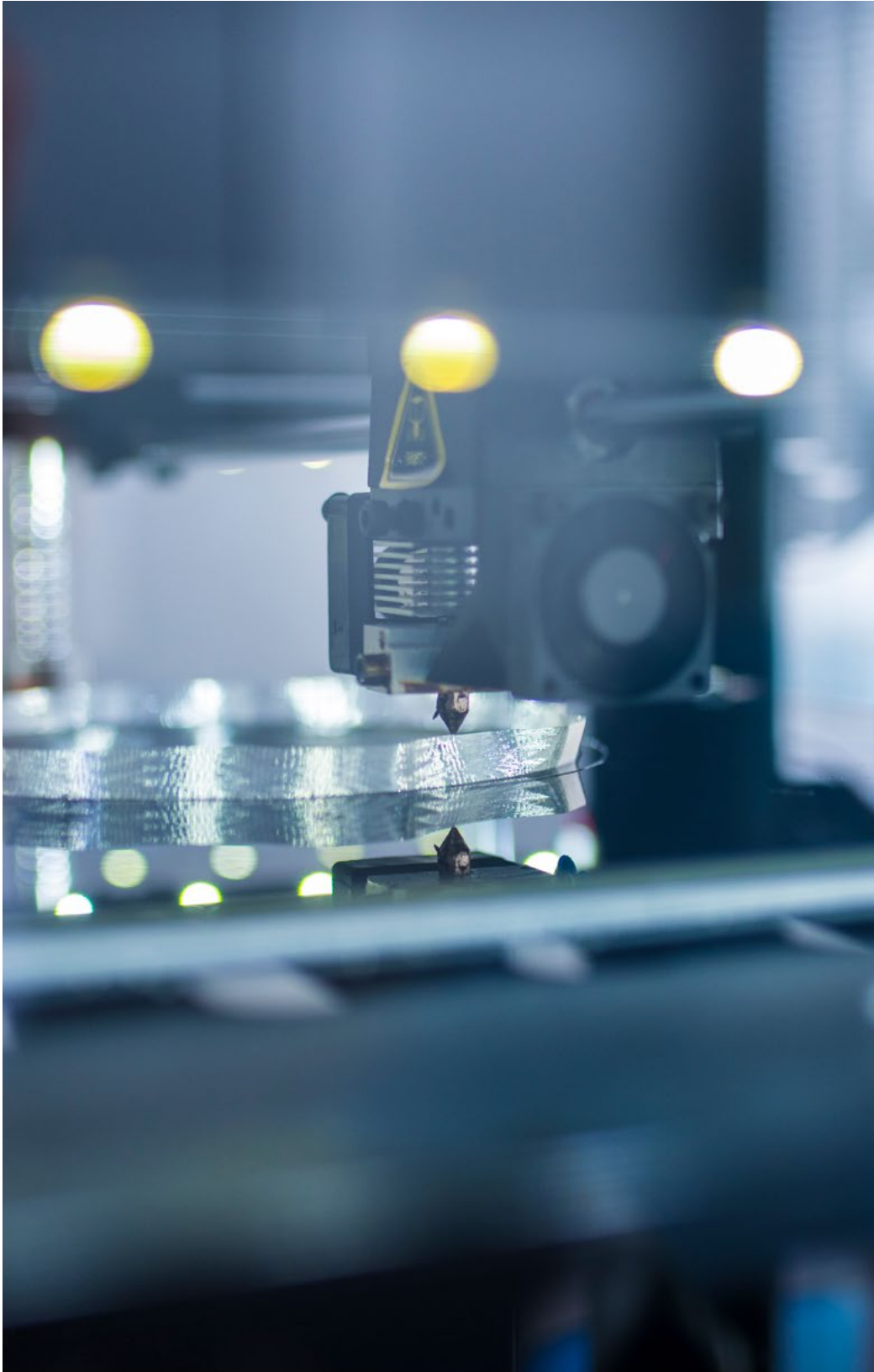
Discover related Dassault Systèmes solutions:

High Impact Innovation

High Impact Marketing

ADAPTING THE WAY WE DESIGN AND ENGINEER PRODUCTS

The design decisions, and how they are communicated to everyone else downstream, are so critical because, at this very early stage of solution development, most resource decisions are determined. The later changes occur, the more expensive they are to be implemented, with the most costly ones stemming from manufacturing changes.

At the same time, and especially for consumer electronics, it's key to really understand the design intent and to protect that intent at all times through hardware, electrical and software design phases.

However, for smart, connected devices and services, the design intent incorporates the entire customer experience. Beyond the physical aspect, this experience is mostly defined by electronics, software and content-driven functions. In this context, Model Based Systems Engineering enables the efficient use and re-use of intellectual property as well as the rapid validation and implementation of optimal product behavior.

As high-tech companies develop portfolios of products configured for global markets, it is key that they are able to test many different design options efficiently and as early as possible. This is where performance simulation is an invaluable process accelerator, being able to test aspects of structural and thermal performance as well as signal quality resulting from antenna positioning.

With regard to multidisciplinary engineering, developing high-tech solutions requires hardware, software and services engineers to be perfectly synchronized at all times. Working on a single data source and process architecture avoids data translation, redundancies and double work.

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Integrating project management and supplier collaboration on the same platform avoids inconsistencies and administrative overhead. It also facilitates getting early manufacturing input to meet cost and quality targets at a global scale.

This is exactly the purpose of 3DEXPERIENCE®, being the only platform able to synchronize all engineering and business stakeholders, while providing best-of-class apps for industrial design, systems engineering and simulation.

Discover related Dassault Systèmes solutions:

Highly Performing Systems

Highly Adaptive Software

High Performance Mechatronics

High-Tech Operational Excellence

Accelerated Device for Midmarket

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ADAPTING THE WAY WE ORCHESTRATE OUR VALUE NETWORK

"When high-tech companies shift from the supply chain to a value network way of working, they will be able to drive true co-creation of value. The handling of the entire combination of hardware, software and service in the value network will enable them to evolve from being efficiency- and cost-driven to innovation- and risk-and-reward-driven," Mahesh says.

To achieve this, OEMs can leverage an online, real-time, intelligent platform to involve their partners in the actual creation of the experience, because many decisions that get resolved downstream could have had a big impact on the functions, quality or cost of a product or service," he adds.

"I agree, Mahesh. Innovators need to move from involving their value chain partners at the tail end of it to rather upstream — by front-loading and effective involvement of the core technology providers, or even the involvement of certification and testing partners," Louis adds.

"The high-tech industry is already seeing this in the shift to 5G or the variance of 5G to support the IoT/IoE scenarios, where software that's delivered on-the-fly is constantly evolving, so products are changing along with it."

That's why innovators need partners who can deliver or help deliver constant updates, so that these nodes on the value network will be able to efficiently synchronize for better maintainability and serviceability of high-tech products and solutions.

Discover related Dassault Systèmes solutions:

High-Tech Operational Excellence

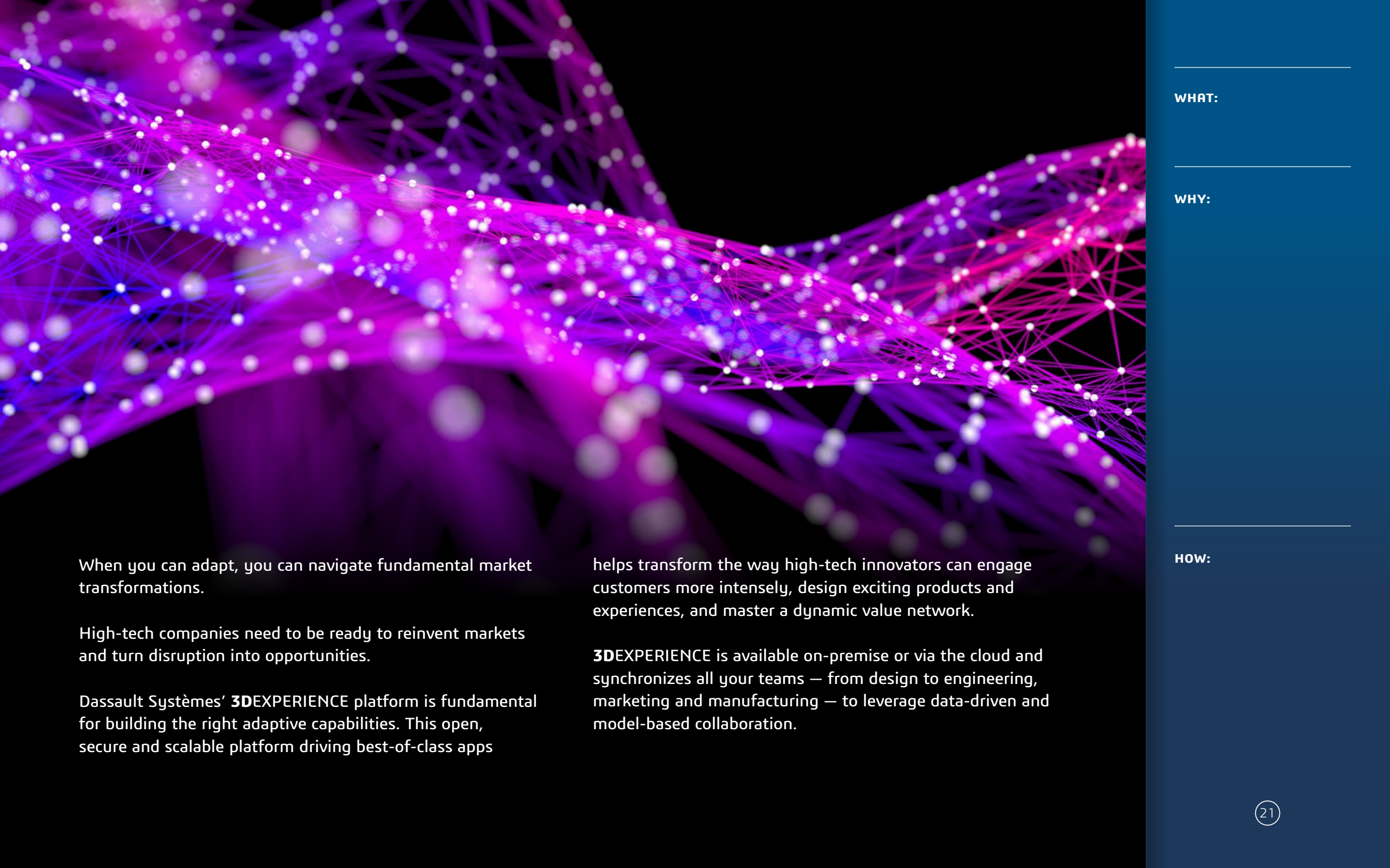Accelerated Device for Midmarket

Highly Flexible Manufacturing

" A tremendous shift is in the fact that a product is producing data about itself that makes it aware of itself and its environment."

– Mahesh DESHPANDE

WHAT:

WHY:

HOW:

When you can adapt, you can navigate fundamental market transformations.

High-tech companies need to be ready to reinvent markets and turn disruption into opportunities.

Dassault Systèmes' **3D**EXPERIENCE platform is fundamental for building the right adaptive capabilities. This open, secure and scalable platform driving best-of-class apps

helps transform the way high-tech innovators can engage customers more intensely, design exciting products and experiences, and master a dynamic value network.

3DEXPERIENCE is available on-premise or via the cloud and synchronizes all your teams — from design to engineering, marketing and manufacturing — to leverage data-driven and model-based collaboration.

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3DEXPERIENCE delivers a unique set of key enablers fostering adaptability by leveraging a single collaboration platform:

- Social listening for automating and dashboarding the understanding of mass customer sentiment, preferences as well as technology and competitive moves.

- Social ideation and experience thinking methodology to foster imagining and conceptualizing innovative high-tech experiences in line with customer expectations and market trends.

- Cloud-based collaboration spaces for orchestrating diverse and distributed experts and stakeholders across engineering and business disciplines.

- 3D-enabled collaborative design, engineering and simulation that helps efficiently and continuously deliver products customers love and buy.

- The ability to efficiently create impactful and interactive sales, marketing and channel engagement visuals of the highest quality.

Learn more about how your high-tech company can engage in the **3D**EXPERIENCE here.

WHAT:

WHY:

HOW:

Inceptra supports engineering and manufacturing organizations with best-in-class solutions to digitally design, simulate, produce, and manage their products and processes, enabling enhanced innovation and productivity.

As the largest Platinum partner in North America, Inceptra is dedicated to Dassault Systèmes' product development software portfolio, complementary solutions, and related services, including training, implementation, integration, support, consulting, and automation services. For more information, please visit Inceptra.com.

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Our **3D**EXPERIENCE® platform powers our brand applications, serving 12 industries, and provides a rich portfolio of industry solution experiences.

Dassault Systèmes, the **3D**EXPERIENCE® Company, provides business and people with virtual universes to imagine sustainable innovations. Its world-leading solutions transform the way products are designed, produced, and supported. Dassault Systèmes' collaborative solutions foster social innovation, expanding possibilities for the virtual world to improve the real world. The group brings value to over 210,000 customers of all sizes in all industries in more than 140 countries. For more information, visit **3ds.com**.

3DEXPERIENCE

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