Digital transformation is emerging as a key driver of sweeping change in the world around us. It has the potential to significantly improve consumer lives and create broader societal good, while providing businesses with new opportunities to create and capture value.

B2B digital platforms enable partnerships across vast ecosystems that are redefining industries and creating new business models. These platforms promise more inclusive and diverse outcomes, while expanding market access and raising innovation levels for participants.

It is clear that platforms will bring about transformational change, but there are a number of challenges that must be addressed. Platforms are hard to build and leaders must establish an environment in which they can flourish. The rapid pace of technological progress, cultural and organizational transformation, outdated regulations and irrelevant metrics are key priorities for policy-makers and business leaders to address.

The World Economic Forum is committed to helping leaders understand the implications of B2B digital platforms and supporting them on the journey to shape better opportunities for business and society. This is increasingly important, given the trillions of dollars now at stake for both society and industry through the development of these platforms.

The Digital Transformation Initiative (DTI) was launched by the World Economic Forum in 2015 to serve as the focal point for new opportunities and themes arising from the latest developments in the digitalization of business and society. It supports the Forum’s broader activity around the theme of the Fourth Industrial Revolution.

In 2015, the DTI analysed the impact of digital transformation on six key industries – automotive, consumer goods, electricity, healthcare, logistics and media – and on three cross-industry topics: digital consumption, digital enterprise, and societal implications.

In 2016, the initiative was extended to cover seven additional industries, and two new cross-industry themes: platform economy, and societal value and policy imperatives. Through its broad focus, the DTI has driven engagement on some of the most pressing topics facing industries and businesses today, and provided business and policy leaders with an informed perspective on how to take action.

This report was prepared in collaboration with Accenture, whom we would like to thank for their support. We would also like to thank the World Economic Forum’s community of more than 40 experts from industry, government and academia who were involved in shaping the insights and recommendations of this project.

We are confident the findings will contribute to improving the state of the world through digital transformation, both for business and society.
INTRODUCTION TO THE DIGITAL TRANSFORMATION INITIATIVE (DTI)

In a world where game-changing innovation has become the norm, DTI provides a unique insight into the impact of digital technology on business and society over the next decade.

The past 12 months have brought a series of exciting technological breakthroughs. Self-driving Tesla cars can now be seen on the road; Uber is testing autonomous taxis in Pittsburgh; Google DeepMind’s Alpha Go demonstrated a leap forward in AI with a famous victory at the board game Go; and augmented reality hit the mainstream with the success of Pokémon Go. Game-changing innovation has become the norm.

Digital innovation is reshaping industries by disrupting existing business and operating models. But it is also having a profound impact on society, presenting a series of opportunities and challenges for businesses and policy-makers.

The Digital Transformation Initiative (DTI) is a project launched by the World Economic Forum in 2015 to serve as the focal point for new opportunities and themes arising from the latest developments in the digitalization of business and society. Over the past two years, DTI has analysed the impact of digital transformation across 13 industries and five cross-industry themes. We have also developed a unique value-at-stake framework to support a consistent approach to measuring the impact of technology on business and wider society.

Our goal is to provide an evidence base and common language for public-private collaboration focused on ensuring that the benefits of digital transformation are fairly and widely shared.
Digital transformation brings some immense opportunities for business and society, and one of its most vital catalysts is new B2B platforms.

Over the next decade, one of the most prominent aspects of digital transformation will be the creation of vast, interconnected ecosystems enabled by industrial B2B platforms. This will reshape how industries are defined, how ecosystem participants interact, and how value is created.

**Definition**

Platforms can be defined as *technology-enabled business models that create value by facilitating exchanges and interactions*. Built on a shared and interoperable infrastructure, fuelled by data and characterized by multistakeholder interactions, platforms bring together people, processes, policies and networked technology to enable value exchanges throughout an ecosystem.

**Platforms Create Value in Unique Ways**

- **By creating as-a-service models around existing assets**
  Leveraging a large, embedded asset base is one of the most natural ways for incumbent players to participate in new, platform-enabled growth models.

- **By delinking assets from ownership to increase value creation opportunities**
  To increase efficiency and value, assets can be independently traded and applied to their best use.

- **By leveraging non-linear growth**
  The accelerated velocity of change within platforms is a fundamental shift away from traditional business models that relied on incremental growth.
Platforms challenge leaders to rethink the vision for their organization – and the outcomes they want from ecosystem collaboration.

Players
Players in the platform arena run the gamut from traditional industrial companies (GE, Siemens, Phillips) to the web-based giants of the digital era (Alibaba, Amazon, Google, WeChat) to a host of start-ups offering industry-specific platforms, data or technical capabilities.

Policy-makers also play a critical role in engagement across the platform ecosystem, as they create the governing frameworks and regulations for the operations of the platform.

Businesses can participate in the ecosystem in four distinct ways:

- The orchestrator is the owner and/or manager driving both the strategic and operational framework, stakeholder interactions and the architecture of the ecosystem and platform.
- Producers supply goods and services that create an inventory of value units for exchange.
- Consumers exchange some currency (money, attention, reputation, etc) for the value units developed by producers.
- Infrastructure providers (communications, IT, software, system integrators and developers) build, manage and deploy the underlying technology of the platform.
An initial analysis created by the World Economic Forum’s Digital Transformation Initiative states that B2B platforms could represent $10 trillion in socioeconomic value from 2016 to 2025. This estimate – derived from a larger forecast that reckons $100 trillion of value is at stake through 2025 – may, in fact, be conservative. IDC predicts that more than half of large enterprises, and more than 80% of enterprises with advanced digital transformation strategies, will create and/or partner with industry platforms by 2018.

Given the complex, emergent and rapidly changing nature of the platform economy, measuring its socioeconomic impact raises some methodological challenges. Traditional financial key performance indicators are needed for measuring the success of a fast-moving ecosystem, but new classes of digital traction metrics – including scale, active usage and engagement – will be essential for understanding engagement in a digital environment.

From a regulatory perspective, it is also critical that actors and regulatory bodies jointly engage in the development of outcome-based metrics. With the commitment by all stakeholders to identify these new shared ecosystem metrics the value of a balanced and healthy platform economy can be more effectively realized.

### B2B platform-enabled value at stake by industry through 2025

<table>
<thead>
<tr>
<th>Industry</th>
<th>Cumulative value to society and industry (2016-2025, $ billion)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Logistics</td>
<td>1,891</td>
</tr>
<tr>
<td>Electricity</td>
<td>684</td>
</tr>
<tr>
<td>Automotive</td>
<td>775</td>
</tr>
<tr>
<td>Oil and Gas</td>
<td>667</td>
</tr>
<tr>
<td>Consumer</td>
<td>557</td>
</tr>
<tr>
<td>Telecoms</td>
<td>383</td>
</tr>
<tr>
<td>Aviation, Travel and Tourism</td>
<td>323</td>
</tr>
<tr>
<td>Mining and Metals</td>
<td>145</td>
</tr>
<tr>
<td>Media</td>
<td>146</td>
</tr>
<tr>
<td>Chemistry and Advanced Materials</td>
<td>121</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>1,669</strong></td>
</tr>
</tbody>
</table>

Note:
(1) Total societal value-at-stake includes impact on the customers, society and environment. Impact on external industries has not been considered. (2) Retail value at stake is embedded into the consumer value-at-stake calculations.
Industry experts have identified six principles for building a trustworthy platform ecosystem.

**Security.** Operating on shared technical infrastructure, the confidentiality, integrity and availability of B2B platforms is critical given the increasingly valuable transactions they handle.

**Accountability.** A platform must function as promised; participants must comply with standards; operators must be held responsible if it fails to fulfil its promises.

**Transparency.** Stakeholders need meaningful ways to understand relationships, intent and outcomes to pursue their self-interests.

**Auditability.** Platforms require the ability to externally audit, verify and monitor transactions (and data flows) across an array of stakeholders and jurisdictions.

**Fairness.** Regulators and consumer protection agencies need to be increasingly vigilant about price discrimination, collusion and anti-competitive tactics to ensure fairness.

**Ethics.** Unethical (or even illegal) activities can permanently damage trust in a platform and the brands associated with it.
## UNLOCKING B2B PLATFORM VALUE: CHALLENGES IN THE PLATFORM ECONOMY

Given the accelerated velocity of B2B platforms, tensions are emerging along multiple dimensions.

### Discrimination

Dynamic platform pricing models use artificial intelligence, advanced algorithms and big data. On one hand, dynamic pricing can foster transparency, reduce search costs, expand markets, improve user experiences and lower prices. On the other, it can mask unfair price discrimination and even collusion. Poorly implemented pricing algorithms can interact in unexpected ways; they can also be deliberately programmed to support collusive practices harming consumers. Finally, online platforms that rely on big data and algorithms run the risk of reflecting discrimination in society as well as the commercial and institutional biases of their providers.⁷

### Cross-border regulation

Platforms are more impactful in larger markets where transactions can flow easily without having to cross geographic boundaries. For platforms that seek cross-border growth, there is the challenge of balancing global-local tensions in regulations. Data-localization requirements reduce economic efficiency by forcing businesses to store data in particular countries. Differences in digital policies and initiatives affect how platforms can operate across borders. Local regulations will also address in different ways the fundamental shift in employee relationships prompted by digital platforms that connect flexible workers with employment opportunities.

### Market dominance

Platforms typically require a certain scale to deliver transformative innovation and unlock new efficiencies. Significant scale, however, brings concerns about anti-competitive behaviour and abuse of power. For example, platform orchestrators leveraging the predictive power of advanced analytics raise concerns that one commercial actor can systematically generate insights that other participants cannot. The challenges to understanding and addressing market-concentration concerns are the lack of agreed indicators and legal precedent, and the limited means of regulatory enforcement.
Managing the transition to the platform economy will require new perspectives, strategic frameworks and capabilities.

Despite similarities with traditional, product-driven models, platform-based business strategies differ in some fundamental ways. As emerging ecosystems transform innovation and create new organizational requirements, enterprises will need to redefine how they can generate value both for their business and wider society. We have outlined six critical strategic and operational ‘table stakes’ for participants in the platform economy.
BUSINESS PRIORITIES
1. BUILDING VISION AND AMBITION

Platforms challenge leaders to rethink the vision for their organization – and the outcomes they want from ecosystem collaboration.

A clear understanding of the platform concept means: identifying the market change that requires a platform-based response; understanding the supporting ecosystem and the roles that actors within it can play; and, ultimately, determining which role(s) fit their organization’s differentiated value proposition.

Multiple roles
Platforms enable actors to take very different roles across the ecosystem. The fluid nature of platforms means any one actor can play multiple roles within a platform ecosystem – or even different roles across multiple ecosystems simultaneously.

Dynamic environments
Actors, who may be playing multiple roles across diverse ecosystems, must realize that ecosystems are highly dynamic environments that evolve naturally and rapidly. An existing ecosystem may find itself disrupted when incumbent businesses join. The orchestrator role, however, is least likely to be disrupted, as there is a significant first-mover advantage for those entities that shape and invest in the ecosystem, e.g. by establishing standards and governance processes.

Case study: SWIFT – platform owners are not always the managers

SWIFT is a provider of interbank secure messaging services around the world. It is a global cooperative, currently used by around 11,000 financial institutions in more than 200 countries. Financial institutions must submit an application to become members and, once they are accepted, owners. As owners, members hold all funds and manage all accounts on behalf of customers, rather than these accounts being held and managed by SWIFT itself. Owners also elect 25 independent directors to govern and manage the company, but owners do not manage the platform. SWIFT acts as the sole platform manager by defining standards, shaping market practices and building the ecosystem. As a result, SWIFT members are the platform owners and users, but not its managers.
Platforms make new business models possible. Particularly when powered by the Internet of Things (IoT) and mobile capabilities, platforms enable business models that can sense, adapt and respond in real time.

New business models are expected to be responsible for 30% of total revenues by 2020. For platform actors, much of this opportunity will emerge from four new classes of business model:

- **Commission-based models**  
  Actors collect commissions (or a margin) for facilitating exchanges, e.g. matching buyers and sellers for a given product or service.

- **Capacity-leasing models**  
  Unused capacity (people, processes or things) is offered to new users outside an enterprise, lowering entry barriers and creating opportunities for innovative collaboration.

- **Subscription models**  
  Products or services are subscribed to for a period of time, which can be as brief as a day. This attracts customers with lower upfront costs.

- **Data-monetization models**  
  This model offers a free (or deeply discounted) primary service in order to sell the data generated by the platform to third parties.

To take advantage of these new business models, actors need to know how to access them: buy, build or ally. The accelerating rate at which incumbents are acquiring platforms (or key platform components) shows the importance they place on accessing these capabilities.

**Case study: Farmobile – using a data-monetization model to sell a service and resell data**

Farmobile is an IoT-based subscription service that puts smart chips into farm equipment. These chips provide useful data to farmers – e.g. crop variety, population, total production and average yield – that can help them improve crop yield and profitability. The service also allows farmers to sell their collected data to farm-equipment manufacturers, which are eager to use it to improve their products. Each microchip costs farmers approximately $1,250 a year, and they can receive $2 per acre (up to 250,000 acres) if they choose to sell their data.
To activate an ecosystem, actors need to focus on four practical goals. With all of them in place, expansive ecosystems can rapidly evolve.

- **Effective platform governance**
  This reduces friction across interactions while meeting the needs of actors within the complex ecosystem. The innovative nature of platforms requires more collaborative governance frameworks that can identify and manage shared risks.

- **Multisided network development**
  Ecosystems don’t just organically grow and flourish around newly built platforms. To rapidly activate an ecosystem, the orchestrator must know how to mobilize ecosystem members, technology and capabilities. That means connecting with critical players, rapidly developing proofs of concept and recruiting talent for sales and delivery.

- **Collaboration**
  This allows actors across the ecosystem to boost the value of participation for all parties, creating a virtuous circle. As collaboration brings a broader range of partners to a platform, new markets can be discovered. Conventional procurement approaches will not create the collaborative, win-win mindset that is needed to be successful in a platform model.

- **Outcome-based metrics**
  These metrics provide important insights into the success of specific entities within the ecosystem, but don’t necessarily point to the key measures that the ecosystem as a whole should be monitoring. The power of new digital metrics is that they can measure the whole system, not just individual components.

### Case study: mFarmer – building a multisided network

mFarmer is an open-source platform developed by Unilever, Grow Asia and Facebook to “improve smallholders’ profitability and productivity across sustainable supply chains” in South East Asia. On the platform, smallholder farmers can gather information on good agricultural practices, markets and financing in order to make informed and sustainable decisions for their farms. Farmers access the platform through their mobile device, without additional carrier charges. The platform is meant to distribute applications based on the needs of the farmers, not compete with existing mobile applications. For instance, smallholders are paid in cash for their crops, but the platform can integrate existing mobile payment applications to facilitate online payments. The goal is that this will increase farmers’ engagement in the supply chain and help them better position themselves in the market.
BUSINESS PRIORITIES

4. ACCELERATING PLATFORM-DRIVEN INNOVATION

A platform is only partially under its owner’s control. The risks and costs of most innovations are borne by outsiders who also generate many of these innovations. In platforms, emergent innovation foreshadows planned innovation.

To accelerate innovation, reducing friction within and across a platform is important. Adopting shared standards is critical for success. Recognizing this, some leading businesses have come together to accelerate the interoperability of key IoT platforms.

In February 2016, the Open Connectivity Foundation (OCF) was founded with a mission to unify IoT standards, so that companies and developers can create IoT solutions and devices that work seamlessly together. Founded by GE, ARRIS, CableLabs, Cisco, Electrolux, GE Digital, Intel, Microsoft, Qualcomm and Samsung, the OCF aims to create protocols and open-source projects for IoT. The foundation also wants to connect the next 25 billion devices for IoT in markets such as consumer, enterprise, industrial, automotive and healthcare. To this end, it is defining a comprehensive communications framework for emerging applications in all key vertical markets that will support a ‘building block’ architecture and provide open-source implementation.

Case study: OrganiCity – accelerating the smart city of the future

OrganiCity is an experimental platform in the EU that fosters interactions among everyone in a given city – citizens, businesses, government – through various channels. These interactions, or conversations, revolve around ways to improve the city through technology. OrganiCity illustrates how platforms are disrupting the historically vertical innovation process by increasing collaboration around specific use cases, such as driving a real-time analysis of London transport network usage by mobility-impaired passengers to recommend accessibility improvements, or providing an insight tool to improve procurement efficiency in public spending.
Three organizational components were repeatedly emphasized in DTI research: commitment from senior sponsors; adjusting critical skills to support new platform opportunities; and the rise of platform-transformed organizations.

- **Senior sponsorship.** Experts agreed that senior sponsorship is critical at both board and C levels, and in middle management, to gain traction for the transition to a platform-enabled business model. This is particularly true where traditional, product-centric revenue models will be cannibalized by new, platform-driven opportunities.

- **Platform talent.** Senior leadership and strategy groups must build on a strong foundation of continual learning to explore how emerging platform-driven business models affect strategy formulation. Organizations can follow a range of approaches to ensure that talent is available in sufficient quality and quantity: reskilling and upskilling existing workforce; acquiring new talent; shifting tasks; emphasizing lifelong learning; developing creative arrangements with academia or other partners.

- **Transformed organization.** The pivot to platform-enabled models requires the adoption of a ‘multicore’ mindset: simultaneously balancing multiple perspectives on business focus, pace, processes and capabilities. An increasingly common approach is to separate the new capabilities or business into a carved-out entity. Research indicates that 58% of high performers have created a dedicated centre of excellence for critical new analytics capabilities that sets the analytical direction for the entire organization.19
Successful platform strategies rely on recognizing the intricacies of managing data; building the technical foundations for a platform; and closely observing the impact of emerging technologies.

• **Data.** The ethical and technical management of data represents ‘table stakes’ for actors in the platform economy. Informed consent is crucial, particularly when forwarding data to parties up and down the value chain. Consistent data regulation creates a more predictable and productive operating environment.

• **Technical foundations.** Platforms depend on a set of core technologies that are assembled and managed by the orchestrator, and enabled by infrastructure providers, component suppliers and other IP providers. Specific components of platforms (see left) are themselves built on various platforms, including cloud, security, insight generation, mobile, IoT and emerging artificial-intelligence platforms. As technological complexity increases, rapid and easy integration into the platform becomes ever more important.

• **Emerging technologies.** Seven technologies are set to reshape business and society: artificial intelligence; autonomous vehicles; big-data analytics and cloud; custom manufacturing and 3D printing; IoT and connected devices; robots and drones; and social media. DTI research into over 120 initiatives determined that 51% of use cases deployed one or more of these seven technologies to either enable platforms or leverage platforms to deliver outcomes.
As platforms emerge, so do the imperatives for business leaders and policy-makers who seek to realize their value to both industry and society.

- **Shape platform strategy and business model** All business leaders and policy-makers should have a clearly articulated strategy for a platform-driven world.

- **Integrate talent and leadership** They must ensure they have access to the proper talent.

- **Foster new mindsets and behaviours** Traditional digital skills must be implemented using new outcome-based mindsets.

- **Activate ecosystem collaboration** Reinforce the importance of a collaborative approach and shift to an outcome-based mentality.

- **Build data and technology capabilities** While business leaders ensure inventories are consistently priced, distributed and fulfilled across platforms, policy-makers should collect and share data with industry actors.
Business leaders and policy-makers each have an imperative that falls solely on their shoulders. Business leaders will need to adjust their organizational structures, while policy-makers should focus on enhancing the regulatory environment for platform-based businesses.

For business leaders: transform organizational structure

To achieve platform goals, organizational structures should accelerate collaboration. Consider:

- What changes might you make to your organizational structure, or even physical environment, to fully foster new platform businesses?
- How do you foster small-company innovation and responsiveness within a large, complex business?

For policy-makers: establish consistent regulations

Policy-makers should aim to establish predictable, enforceable and harmonized regulations across local, state and national boundaries. Consider:

- How can you harmonize policies across boundaries on critical issues of IP ownership, trademark and copyright regulation, data management and privacy considerations, and local taxation implications?
- How can you increase the predictability of the regulatory environment to support platform players seeking to create transformative digital experiences for all?
- How will you apply fair and consistent 'rules of play' for new actors?
Over the past two years, DTI research has focused on understanding the impact of digital transformation in 13 industries and drawing insights from the cross-industry themes that came out of that analysis.

We have covered five cross-industry themes:

**Digital Consumption** explains how the rapidly changing expectations of digital customers are forcing enterprises to reinvent themselves. **Digital Enterprise** looks at how companies can respond by rethinking every aspect of their business. **Platform Economy** focuses on the immense impact of one type of digitally enabled business model – B2B platforms. The adoption of new digital business and operating models is having a profound impact on society, a theme we analyse in **Societal Implications**. We then introduce our quantitative analysis of the impact of digitalization on business and wider society in our final cross-industry theme, **Societal Value and Policy Imperatives**.

Our industry deep dives have covered 13 industries: **Automotive; Aviation, Travel and Tourism; Chemistry and Advanced Materials; Consumer; Electricity; Healthcare; Logistics; Media; Mining and Metals; Oil and Gas; Professional Services; Retail and Telecommunications.**

White papers, SlideShares, articles, an overall executive summary for the DTI project, and a library of video interviews can be found on our website.

Key features

- Mobile-responsive, platform-agnostic site
- 13 industry white papers
- 5 cross-industry white papers
- 13 SlideShare summaries of white papers
- 60+ video snippets and mini documentaries
- Online case study repository
- 4 animations on digital challenges
The World Economic Forum would like to acknowledge and extend its sincere gratitude to a broad community of contributors across Partner companies, technology start-ups, academicians and experts.

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- Applico
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- Cheung Kong Graduate School of Business
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- Cohealo
- Comcast
- DHL
- European Commission
- General Motors
- Google
- The Governance Lab at New York University
- Hewlett Packard Enterprise
- Innotribe and The SWIFT Institute
- Jasper
- Kaiser Permanente
- Luxoft
- Marriott International
- Mastercard
- Monsanto
- OpenPort
- Philips Healthcare
- Platformnation Labs
- Ripple Labs
- Salesforce.com
- SAP
- Schneider Electric
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ENDNOTES

4 IDC, IDC Predicts the Emergence of "the DX Economy" in a Critical Period of Widespread Digital Transformation and Massive Scale Up of 3rd Platform Technologies in Every Industry [Press release], 4 November 2015.
6 The DTI project includes 12 industries. However, Healthcare was not fully quantified and has therefore been excluded from the Platform Economy value-at-stake calculations. Additionally, value at stake from Retail was embedded within the Consumer industry.