Top 10 Predictions

IDC Predictions 2015: Accelerating Innovation — and Growth — on the 3rd Platform

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PREDICTIONS

- Worldwide IT and telecom spending will slow modestly to 3.8% in 2015, exceeding $3.8 trillion. The industry's dramatic and disruptive shift to its 3rd Platform for innovation and growth (built on cloud, mobile, social, and big data solutions) will accelerate: Spending on these technologies and solutions – growing at 13% – will account for one-third of all industry revenue and 100% of growth. The 2nd Platform world will tip into recession by mid-2015.
- In telecom services, wireless data will finally become the largest segment worldwide ($536 billion); it will also be the fastest-growing segment (13%). Telecom carriers will strike mutually beneficial deals with over-the-top (OTT) service providers, but under tighter regulatory scrutiny as net neutrality is endorsed.
- Smartphone and tablet spending will hit $484 billion, generating 40% of all IT growth. Phablet (5.5–7in. screen) momentum will accelerate, accounting for 18% of smartphone units sold in 2015 – up from 11% in 2014. Wearables innovation will explode, but unit sales will underwhelm in 2015.
- The greater cloud market will hit $118 billion, growing to over $200 billion by 2018. Amazon will come under three-way attack but will hold or gain share. Many infrastructure-as-a-service (IaaS) players below the top 10 will drop out of the market; Google, Microsoft, IBM, Alibaba, and China Telecom will gain share. The number of apps in major cloud marketplaces will double. The battle to lure developers to cloud platforms will drive new offerings in cognitive/machine learning (ML) and Internet of Things (IoT) services. In the "strange bedfellows" department, Facebook will partner with Microsoft and/or IBM in platform as a service (PaaS), HP will partner with Amazon Web Services (AWS), and Salesforce will use Microsoft, IBM, and/or AWS cloud datacenters.
- The overall big data and analytics market will reach $125 billion worldwide. Spending on rich media analytics will at least triple in 2015. Providing data as a service (DaaS) – and securing strong "data supply chains" for those services – will become a high priority, with 25% of top analytics vendors offering DaaS. IoT analytics will be hot, with a five-year CAGR of 30%.
- IoT spending in 2015 will exceed $1.7 trillion, a 14% jump from 2014, driven by nearly 15 billion devices. By 2020, this will rise to $3 trillion and nearly 30 billion devices. Cisco, IBM, and Intel will form a privately held IoT solutions company to help create IoT critical mass in the industrial solutions.
- Datacenter spending growth will continue to shift toward cloud service providers and away from enterprises. This will drive a renaissance in IT hardware innovation, led by service

providers Amazon, Google, Microsoft, and IBM. It will also drive consolidation among the top 10 infrastructure vendors.

- The movement of IT into the fabric of how industries operate will accelerate in 2015. Last year, we predicted that 3rd Platform solutions would disrupt one-third of the leaders in every industry by 2018. In 2015, we'll see the number of "industry platforms" — epicenters of innovation and disruption — double.
- The 3rd Platform will demand, and enable, new approaches to information security. In 2015, 15% of mobile devices will be accessed biometrically, growing to over 50% by 2020. Encryption as a service, powered by the cloud, from a growing list of vendors, will be used for over 80% of regulated data by 2018.
- Despite moderating GDP growth, China's impact on information and communication technology (ICT) markets will skyrocket. In 2015, China will account for 43% of all ICT spending growth, one-third of all smartphone purchases, and about one-third of all online shoppers. With a huge domestic market, Chinese vendors such as Alibaba, Tencent, Baidu, Lenovo, Xiaomi, and Huawei will grab rising shares of global ICT markets. The Chinese government's 13th Five-Year Plan will further drive massive 3rd Platform investment and innovation.

IN THIS STUDY

Welcome to IDC's predictions for 2015 in the ICT industry.

In this document, we offer IDC's broadest outlook for the overall technology marketplace. We tapped into our worldwide network of over 1,100 IDC worldwide analysts to develop our views on what 2015's most important developments and events will be. As always, in this, our 20,000ft view of the ICT industry's future, we narrowed down to those predictions that meet the following criteria:

- **High growth.** They are about key growth opportunities for 2015.
- **Industrywide impact.** They impact many different segments and players in ICT.
- **Transformation and disruption.** They require strategic vision, strong leadership, and major structural change within companies (and across the industry) and present major opportunities for competitive advantage.

Our goal is less to shock you than to draw your attention once again to "what will matter most" in 2015: the trends and events that spotlight strategic shifts that are profoundly reshaping the ICT marketplace *and* that require ICT vendors and their customers to make smart, and sometimes very difficult, decisions.

IDC Predictions 2015 Team

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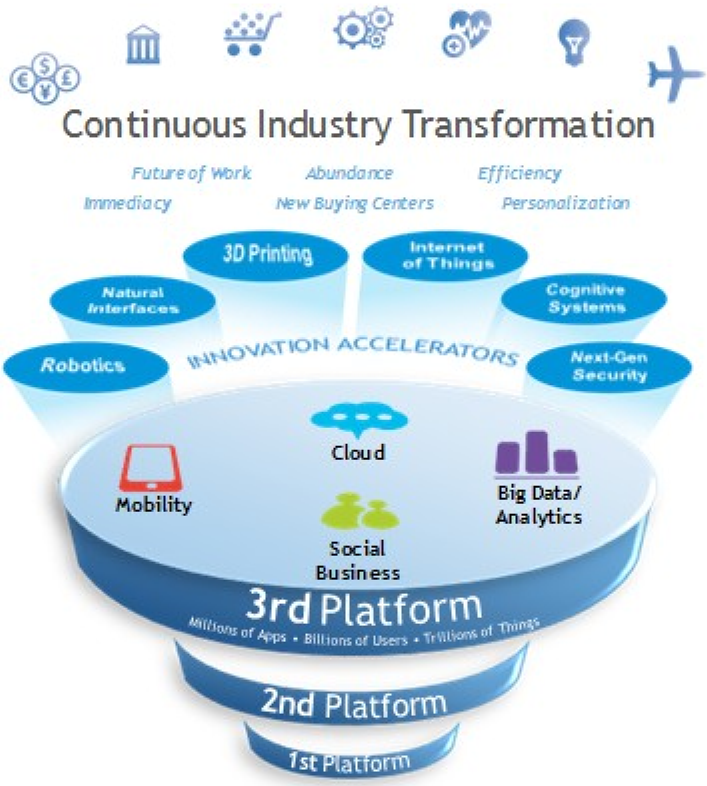
SITUATION OVERVIEW

Since 2007, IDC has predicted, chronicled, and analyzed the industry's remarkable shift to its "3rd Platform" for innovation and growth, built on cloud, mobile, social, and big data technologies (see Figure 1). As we predicted in 2007 and subsequent years, in 2014, the 3rd Platform has become the new core of ICT market growth, accounting for 30% of total market spending and almost 100% of growth.

FIGURE 1

The 3rd Platform for IT — and Business — Innovation and Growth



Source: IDC, 2014

As we look ahead to 2015, the industry is entering the most critical period yet in the 3rd Platform era: the "innovation stage," defined by an explosion of innovation and value creation on top of the 3rd Platform's cloud, mobile, social, and big data foundation. The innovation stage will also be driven by a new wave of core technologies – innovation accelerators – that radically extend the 3rd Platform's capabilities and applications, including:

- The Internet of Things: A massive expansion of the edge, to "smart" cars, buildings, homes, industrial equipment, wearables, and more
- Cognitive systems: Systems that observe, learn, analyze, offer suggestions, and even create new ideas – dramatically reshaping every services industry
- Pervasive robotics: Driving knowledge from the digital world into action in the physical world, through robots, self-driving cars, drones, nanorobots, and more
- 3D printing of all kinds: Materializing all sorts of physical things from digital blueprints – from food to clothing to eventually even living tissue and organs

- **Natural interfaces:** More simply and powerfully connecting people and 3rd Platform systems — through speech, vision, motion, touch, and beyond
- **3rd Platform–optimized security technologies and solutions:** Better designed to keep up with the massive scale and expanding scope of the 3rd Platform

Harnessing this expanding innovation platform, a rapidly expanding community of developers will create a tenfold increase in the number of new killer solutions over the next four to five years. Many will be big data intensive, and many will harness the extended reach of the Internet of Things. Two-thirds of these new apps will have an industry-specific or role-specific focus.

In fact, industry-focused developer communities on the 3rd Platform will become epicenters of innovation in just about every industry on the planet and will seriously disrupt traditional leaders in these industries as competitors use the 3rd Platform to create new offerings, new business models, and new cost structures to drive revenue growth and expand value.

This movement of IT, way beyond traditional boundaries of datacenters and IT departments, will be the most dramatic aspect of the 3rd Platform's innovation stage. The end goal is nothing less than the reinvention — and continuous transformation — of every industry on the planet. In fact, at IDC, we believe the 3rd Platform is not just a technology innovation platform; it is fast becoming a *business* innovation platform.

FUTURE OUTLOOK

In the 10 IDC predictions for 2015 in the sections that follow, we'll make predictions about the emerging battles, players, innovations, and value creation around and on top of the evolving 3rd Platform: mobile devices and apps, the cloud, big data, the Internet of Things, next-generation infrastructure, security, 3D printing, digitally transforming industries, and a rapidly rising China.

We'll start, as always, with predictions about the overall 2015 outlook for the worldwide ICT industry, followed by a look at 2015's important events in the transforming telecommunications sector.

1. Worldwide ICT Spending

Worldwide ICT spending will be uneven in 2015, with macroeconomic wild cards continuing to cause short-term disruptions and volatility. Here are our top-level predictions for industry growth:

- **Overall ICT spending growth will slow modestly to 3.8% in 2015, exceeding $3.8 trillion.** $2.1 trillion will be spent on IT products and services, while $1.7 trillion will be spent on telecom offerings. Growth will be down from 2014's 4.0%, mainly due to the long-term deceleration in mobile device growth. Most other areas of IT spending look remarkably stable, given the level of economic uncertainty.
- **Most major enterprise IT markets will show improved growth.** We predict improving growth in enterprise hardware (core infrastructure) spending (4.5%) through most of 2015. Software spending will remain strong (6.4%), and IT services spending will see a modestly improved 3.5% growth pace.

- **Emerging markets will remain volatile, but spending will grow at 7.1% — five times the rate of developed markets.** China — with 11.4% spending growth — accounts for a whopping 43% of all ICT spending growth worldwide. (See prediction number 10 [China].)
- **Developed markets' ICT growth will be uninspiring.** GDP growth is challenged in Europe, Japan is back in recession, and the U.S. economy won't be immune to any slowdown in the rest of the world that drags into next year. We predict similarly uninspiring growth in ICT spending in Europe (0.2% growth) and Japan (-1.3%). The United States will post comparatively "good" 2.7% growth. As a group, developed markets will grow a modest 1.4%.

By far, the most important story in our industry remains the "tale of two industries": the rising 3rd Platform marketplace and the waning 2nd Platform world:

- **We predict a continuing "boom" in 3rd Platform technology and solutions, with 2015 growth of 13% in 2015.** And we predict a "near recession" in 2nd Platform offerings, at a paltry 0.4% growth. By the second half of 2015, we expect the 2nd Platform will shift fully into recession.
- **The 3rd Platform part of the market will reach critical mass.** When IDC introduced the 3rd Platform discussion several years ago, these technologies and solutions accounted for only about 10% of the market. In 2015, 3rd Platform offerings will account for one-third of all ICT spending and virtually 100% of all spending growth.

It's no surprise that the remainder of IDC's predictions for 2015 focus almost exclusively on the accelerating scale-up of the 3rd Platform ICT marketplace, as it enters the all-important "innovation stage."

2. Telecommunications

In a cloud- and mobile-dominated IT world, no segment of the industry will be more important than the telecom sector. But it's obvious that — even as telecom services demand explodes — business models remain challenged. We predict that 2015 will continue to see a lot of soul-searching among the carriers, as they (as well as regulators and the companies that depend on high-speed data networks) seek sustainable models in the 3rd Platform era:

- **Wireless data will — finally — be the number 1 telecom services spending category worldwide.** For the first time — and for a long time to come — wireless data will be the largest telecom services segment worldwide, reaching $536 billion. Incredibly, the largest segment in this sector will also be the fastest-growing segment in 2015 (13%).
- **Wireless price wars will fuel 3rd Platform innovation.** Wireless service providers worldwide are in price wars, and the pace of price changes is accelerating from monthly to weekly changes. This margin pressure will force operators to accelerate innovation and find new sources of revenue. 3rd Platform participation will become more important than ever. We predict 2015 will see carriers accelerate innovation along two vectors:
    - **More quickly build valuable platform- and API-based services in their networks, and aggressively expand the community of developers that can leverage those services.** The services must have real added value and be competitively priced. Carriers are not unlike the cloud IaaS providers: lower-level cloud service (storage, compute) pricing is being driven to near $0, so they're racing up the stack, to provide valuable services on top (see

prediction number 4 [Cloud Services]), and working to get developers to use those (stickier) services.

    - **Seek rapprochement with major over-the-top cloud services providers**. In 2015, we predict more mutually beneficial deals — in the form of a new revenue-share model — between major carriers and some of the largest players in the OTT community. The reason is simple: Both communities have a lot to gain and too much to lose if they don't come together. One simple example: Web pages are getting bigger and more complex and page load times and abandonment rates are increasing. We believe companies like Amazon.com and Netflix will give an operator a small percentage of customer transaction revenue if an operator can guarantee page loads of 10ms or less. Of course, for operators to guarantee performance, they need to invest in new technologies — Web acceleration, protocol optimization, caching, and so forth (see the previous bullet).

- **Net neutrality will be mandated, sort of, in the United States.** The prediction of carrier and OTT rapprochement leads us, of course, to net neutrality. In the United States, there will certainly be more regulatory oversight of Internet access put in place in 2015. There is enormous political and economic pressure pushing in favor of net neutrality. The carriers' threats are more bark than bite: If they slow down network investment as a response to greater oversight, they will lose the greater long-term battle for growth and industry leadership. We predict we'll see a "hybrid" solution from the Federal Communications Commission (FCC), one that seeks to establish and enforce minimum Internet access and performance requirements, but one that leaves some room for OTT players to seek out, and telcos to provide, more assured performance-level options above that baseline. The balance point within this hybrid approach will surely be more toward putting reins on carriers' ability to deliver premium services at the expense of reasonable baseline access and performance. (Net neutrality may play out quite differently, or at a different pace, in other regions like the European Union, where the political winds are generally more favorable to telcos.)

3. Mobile Devices and Apps

Mobile devices and apps — the radically expanding edge of the 3rd Platform and unquestionably the front edge of its innovation — will continue to shake up the IT industry in 2015: driving much of the industry's growth, continuing to rapidly morph form factors, bringing in key players from the massively mobilized Chinese market, and redefining how organizations engage with their marketplaces:

- **Smartphone and tablet spending will hit $484 billion, generating 40% of all IT growth (excluding telecom services):**

    - **Smartphones sales will reach $412 billion,** and will dominate smart mobile device growth, accounting for an astounding 84% of positive growth.

    - **Phablet (5.5–7in. screen smartphone) momentum will accelerate,** as this segment accounts for 18% of smartphone units sold in 2015, up from 11% in 2014. Phablet growth will continue to cannibalize tablet growth in 2015 — as phablet sales growth (60%) is 20 times tablet sales growth.

    - **Chinese vendor market shares will surge.** We predict that, by 3Q15, industry leader Samsung's share of worldwide smartphone shipments could drop below 20% for the first time in 17 quarters. Who's coming up? China-based Lenovo and Xiaomi — which four years ago combined for 4.3% share (including newly acquired Motorola's share within Lenovo) — are on track for a combined 15%+ share of worldwide unit sales by the end of

2015. Xiaomi's remarkable growth has been driven just by the domestic Chinese market. Other Chinese players to watch in 2015 include Huawei, ZTE, and Coolpad.

  - **Wearables will underwhelm in 2015 (40–50 million units)** but will be a huge area of innovation in 2015 and the fastest-growing mobile app category within two to three years. In addition:
    - **A wristphone will arrive in 2015, ahead of its time.** At least one of HTC, LG, or Sony will ship a wearable device with a full cellular stack designed to replace the mobile phone entirely. The device will be doomed by execution challenges.

- **Mobile app downloads will hit 150 billion, up 18%, and China's role will rise.** While 18% growth will be a sharp decline from the 61% growth witnessed in 2014, the numbers are still undeniably massive. In 2015, over 3.5 million applications will be available across app stores worldwide. IDC predicts that Google and Apple, combined, will continue to dominate distribution, with their stores accounting for almost 80% of apps downloaded. But an incredibly diverse number of Chinese independent app stores dominate the remainder and will account for 18% of download volumes (up from 10% in 2012) as that market continues to tempt developers with its size and appetite but challenges them with Byzantine distribution options.
- **Enterprise mobile app development will more than double.** Enterprise development and deployment of custom mobile apps will explode in 2015, as mobile apps become businesses' primary engagement point with the marketplace. A majority of Western enterprises will have developed and mobilized more than six custom mobile applications by the second half of 2015. If this number sounds unremarkable, it's because it is. IDC's 2014 *Mobile Enterprise Software Survey* showed shockingly low adoption of custom mobile applications, with 60% of large company respondents indicating they had mobilized three or fewer apps (40% had two or fewer).

4. Cloud Services

The cloud market is sprawling and diverse. In 2015, the key dynamics within the market will include expanded adoption, consolidated competition, new disrupters, developer migration, solution expansion, new technology battlefronts, and "strange bedfellow" partnerships:

- **Public IT cloud services will drive massive growth, reaching almost $70 billion in 2015**, on its way to $126 billion in 2018, dominated by software as a service (SaaS) (over 70% of public cloud spending):
  - **The "greater cloud market" — including cloud services and all the hardware, software, and services enabling them — will hit $118 billion in 2015 and grow to over $200 billion by 2018.**
  - **The outsourcing industry will be double-timing to become more "cloud enabled."** The world continues to have a need for fully outsourced and managed services. But outsourcers are facing massive cannibalization and price pressure from cloud services and are racing to transform their large portfolios as well as new deals to incorporate the cost and agility benefits of cloud services. In 2015, we predict that nearly 20% of outsourcing deals in 2015 will be "cloud enabled" — that is, will have cloud services and systems as the underlying technology within the broader services contract. We predict that this will nearly double within the next two to three years, as services providers aggressively modernize

their managed/outsourced services delivery platforms. Failure to achieve this pace of transformation will be a disaster.

- **IaaS competition will intensify and quickly narrow,** as adoption of cloud IaaS will grow briskly (36%) in 2015:
  - **Amazon will come under increasing three-way attack.** Amazon has dominated cloud IaaS from the beginning and continues to have dominant share (47% in 1H14). But competitive pressure will continue to build up in the top ranks of cloud. We predict that, in 2015, a three-way attack on Amazon will intensify, as Google, the "IT incumbents" (notably Microsoft and IBM), and Chinese players increase their investments, their pace of innovation, and their pricing pressure, with the goal to "Amazon" (i.e., disrupt) Amazon.
  - **But Amazon will hold or gain share in 2015.** The best job of "Amazoning" Amazon may be done by Amazon itself in 2015. With some of its recently announced services, AWS is resetting the bar for IaaS provisioning and consumption: bringing the minimum time to deploy compute down to tens or hundreds of milliseconds and the minimum unit of consumption priced in increments as low as 100ms of use. With this new capability, Amazon will continue to rapidly expand the use cases for the cloud and drive better economics through even greater levels of oversubscription.
  - **Many IaaS public cloud players below the top 10 will drop out of the market in 2015.** With the scale of investment and the pace of innovation going way up among the top providers, many in the lower ranks will choose to step away from public IaaS services in 2015, choosing to partner with one or more of the top vendors as strategic public cloud providers. Candidates for the "partner versus build" approach include HP, Rackspace, many telcos, and virtually all IT services companies and MSPs. Look for Google, Microsoft, IBM, Aliyun (Alibaba), and China Telecom to be among those that gain share in 2015.
- **The "PaaS war" will expand,** as competitors step it up in the most strategic real estate in the cloud, wooing developers and apps to their cloud platforms and communities:
  - **The numbers of apps available in the leading cloud marketplaces will more than double in 2015.** In the battle for cloud dominance, success is measured in how many developers and apps you can bring to your platform and marketplace. In 2014, the major PaaS and cloud app marketplaces (from AWS, Microsoft, and salesforce.com) averaged about 2,500 apps. Given the rapid migration of developers and customers to the cloud, look for that to easily grow to over 5,000 apps in each of these marketplaces.
  - **SaaS/software players will accelerate their adoption of PaaS and cloud marketplaces in 2015.** Many SaaS providers, as well as traditional software vendors coming to the cloud, have been very IaaS focused. These developers would build their own stack and simply run it on top of a cloud provider's IaaS services. They didn't see enough value in service providers' (SPs') PaaS services, were worried about lock-in, or were uncertain about costs. But in 2015, we predict a rapid shift of developer interest in building their solutions at the higher PaaS level. This is in large part due to the greatly stepped-up efforts of AWS, Google, Salesforce, Microsoft, IBM, and others to radically expand their developer services (open source projects like Kubernetes and Docker; SDKs supporting popular languages like Ruby, PHP, and Python; frameworks like Django, Flash, and Spring; better load and function testing; and multiple storage options); more options for pre-buying reserved compute environments to create a predictable operational cost; and more robust marketplaces for selling services and supporting customers. In 2015, we predict that more

than 15% of all SaaS vendors (and almost 60% of SaaS start-ups) will develop and deploy their offerings with extensive use of PaaS services. Almost 20% will use a single cloud marketplace as their sole channel. By 2018, the percentage of SaaS ISVs using PaaS services will rise to over 50%.

- **Containers will disrupt hypervisors and — incidentally — rapidly outpace OpenStack adoption.** The rise of container technologies (most notably Docker) presents an obvious challenge to virtualization vendors like VMware and Microsoft. We would not be surprised to see Microsoft go "all-in" on Docker in 2015, and essentially disrupt its own virtualization technology (Hyper-V), to get a leg up on rival VMware. But what may be more interesting to watch in 2015 is how the pace of Docker adoption outpaces that of last year's hot open source cloud technology, OpenStack. These technologies are not competing, but as two hot open source projects, it is interesting to compare their market acceleration. Docker is simpler and smaller in scale and easier to approach. Customers can start with a small deployment for developers and then add orchestration and a wider rollout to the datacenter. This is exactly how hypervisors got a foothold in the enterprise. OpenStack, on the other hand, is much more complex and, as a cloud technology, must span many areas of the datacenter, requiring more time and consideration to adopt. And, of course, the promise of containers is to make the underlying IaaS layer (where OpenStack plays) largely irrelevant. (We still predict, however, that OpenStack will emerge as one of the most widely deployed cloud OSs — and the most successful open source cloud OS — over the next several years.)
- **IoT and cognitive/machine learning will be the new PaaS battlegrounds in 2015.** For PaaS competitors, 2014 was the year of MBaaS, database and analytics services, and containers. In 2015, we predict the hottest areas for competition will expand to include IoT back end as a service (IoT BaaS) and cognitive/machine learning services. (See prediction number 5 [Big Data].)
- **Facebook will enter PaaS partnerships with IBM and Microsoft.** Facebook has developed some unique identity, advertising/monetization, and mobile development assets that nicely complement the capabilities of these enterprise-focused PaaS players. This will be one of many examples in 2015 of companies wisely choosing to partner with "strange bedfellows" to more quickly expand their market opportunities and maintain focus on their core capabilities. (Other "strange bedfellow" partnerships will emerge around IaaS as well — think AWS and HP; Salesforce and Microsoft, IBM, or AWS; and many others.)

5. Big Data

In 2015, the overall big data and analytics market will reach $125 billion worldwide in software, hardware, and services. The big data point solutions deployed in the past three to five years will become more complex (integrating more data sources, impacting more users, affecting more applications), which will increase the professional services-to-technology ratio by 25% over the next five years.

Rich media analytics, data as a service, cognitive systems/machine learning, and IoT analytics will be strategic areas of innovation in the big data space in 2015:

- **Rich media analytics will at least triple in 2015 and emerge as the key driver for BDA technology investment.** Already half of large organizations in North America are reporting use of rich media (video, audio, image) data as part of their BDA projects. We expect the penetration rate to grow 75% in the next three years and 100% in the next five years. Examples are:

- **Video analytics** vendors to watch (and key use cases) include Sharper Shape (asset inspection using flyover video streams), SmartDrive Systems (commercial driver safety), Immersive Labs (facial expression and emotion measurement), and RAMP (marketing enablement).
- **Audio analytics** vendors to watch – or listen to! – (and use cases) include Nuance (speech analytics), Apple Siri, and Microsoft Cortana.
- **Image analytics and search** vendors to watch (and use cases) include GE, Hitachi, and Siemens (in healthcare); Amazon, Cortexica, and Superfish (in retail); and Google Maps (in government [e.g., property tax analysis]).

- **Data as a service will become a strategic supply chain for cloud platform and analytics players (including industry platforms).** Everyone understands that information is the grist for the innovation mill, and we predict that 2015 will be a big year for vendors to identify and secure the best "data supply chains" for their cloud-based innovation platforms and communities. 2014 was a busy year for many vendors in this area: For example, Oracle acquired BlueKai, IBM announced a partnership with Twitter, and Twitter acquired Gnip. Amazon and Microsoft continue to make a range of commercial and open data sets available through their cloud services. HG Data, DataSift, FirstRain, and Attensity are all further examples of start-ups in this space. In 2015, we predict that 25% of the top IT vendors will offer (through partnerships and acquisitions) data as a service – increasingly focused on preprocessed/curated content, as clients' needs expand from buying raw lists or content to value-added information such as recommendations, scores, and filtered lists. (IDC labels this growing information services segment value-added content [VAC].)
- **IoT will be the next critical focus for data/analytics services.** The IoT analytics market is expected to grow at a CAGR of 30% over the next five years. As noted previously, IoT BaaS will emerge, as players – including Amazon, IBM, and Microsoft – continue to stitch together a wider variety of PaaS services, including stream processing, data triggers, indexing and synchronization, and notifications, into more tightly integrated offerings directly marketed to the growing community of IoT developers.
- **2015 will be the year of cognitive/machine learning with a rapidly growing number of applications incorporating ML techniques.** IBM has gained a lot of well-deserved attention for its Watson cognitive systems that integrate machine learning, AI, and natural language technologies into "advisor" services. Earlier this year, IBM transformed Watson into a cloud service and plans to partner with vertical industry players as well as IT industry players (including Apple) to drive dozens of new cognitive apps in the next 24 months. In 2015, we predict other PaaS competitors will step up their efforts to compete in the cognitive space. Microsoft launched the Azure Machine Learning service this year. And Google has been very actively developing in the "deep learning" space. We predict that Amazon will unveil a machine learning offering as well in 2015. In China, Baidu is also developing capabilities in this area. Watch this space as a critical area for analytics-based creativity and industry transformation in the innovation stage of the 3rd Platform.

6. Internet of Things

IDC has identified the Internet of Things – a massive expansion of the edge, to "smart" cars, buildings, homes, industrial equipment, wearables, and more – as one of the most important innovation accelerators for the growth and expansion of IT-based value in the 3rd Platform era. The invention of more and more intelligent and connected "things" will drive the development of thousands of new 3rd Platform solutions — ones that range from providing simple consumer conveniences to those that transform entire industries (sometimes both!). Here are just a few of IDC's IoT predictions for the coming year:

- **IoT spending in 2015 will exceed $1.7 trillion, a 14% jump from 2014, driven by nearly 15 billion Internet-connected, autonomously communicating devices.** By 2020, this will rise to $3 trillion and nearly 30 billion devices. In 2015, one-third of IoT spending will be around intelligent/embedded devices outside of the IT and telecom industries, including intelligent and embedded automotive systems, retail systems, energy systems, healthcare, and consumer electronics.
- **Cisco, IBM, and Intel will form a privately held IoT solutions company to help create IoT critical mass in the industrial solutions.** Cisco and Intel have done this before in their parts in forming VCE to accelerate integrated systems/converged infrastructure. The new company will be able to create enough momentum across multiple industry segments. This new company will challenge new players (such as the GE-Pivotal solution offering) from getting too far ahead of the rest of the industry. Risks of alienating current partners (Schneider Electric, SAP, Bosch, et al) will be worth the revenue opportunities to the new "company." This prediction is admittedly a risky one, since it names specific companies. A less risky version, with a very high degree of likelihood, is that several "market maker" IT companies will create this kind of "kick-start the market" company, very likely with the involvement of key vertical industry giants.
- **IoT back end-as-a-service offerings will emerge in 2015** (as mentioned previously), as PaaS and key analytics vendors deliver tools for developers to write industry-based applications that connect to back-end analytics engines. Predictive maintenance will lead the IoT solutions category. This will pit IT vendors in head-to-head competition with the fast-charging industry solutions providers — but it will also present partnership opportunities (see prediction 8 [3rd Platform Industries]).

7. 3rd Platform Datacenters

Underneath the cloud and mobile foundation for the 3rd Platform, we will see massive investments in IT hardware and software for next-generation datacenters. In 2015, the revolution continues in where capacity is growing, in what new designs and architectures are emerging, and in who is driving infrastructure innovation. The following are the important trends transforming the datacenter world:

- **Datacenter growth will accelerate its shift toward cloud SPs (versus enterprise).** By 2016, over 50% of raw compute capacity and 70% of raw storage capacity installed worldwide will be in cloud-, mobile-, and big data–optimized hyperscale datacenters. This fundamental shift of demand, away from enterprise datacenters and toward large service providers — and largely driven by the growth of 3rd Platform technologies and solutions — changes everything in the IT infrastructure hardware and software worlds.
- **Cloud service providers will drive a new renaissance in hardware innovation.** As capacity growth tilts more and more toward cloud SPs — which we predict will increasingly customize the hardware they source from manufacturers — the next three years will see more new system designs rolled out than in the past 10–20 years. By 2020, IDC predicts that nearly half of all server units shipped will be based on custom design specifications, driven by the customer (mostly SPs) rather than server OEMs. Lots of new workload-specialized architectures and

instance types are being developed by cloud SPs ("cloud first" hardware innovation) – with the collaboration of (and competition among) cloud SPs, chip designers, foundries, app-specific specialists, OEMs, ODMs, and so forth. The players include Amazon, Google, Facebook, Microsoft, IBM, Oracle, HP, Dell, Cisco, EMC, Intel, AMD, ARM, NVIDIA, Qualcomm, Wistron, Quanta, Baidu, Tencent, and Alibaba. New workload-optimized systems on a chip built from ARM, Intel, and others' architectures will be created (and delivered as new cloud instance types by the IaaS community). Look for AWS, Google, IBM, Microsoft, and the Chinese SPs to lead the way.

- **Vendor consolidation will continue across the server, storage, software, and networking silos.** Continuing pressure – from cloud SPs and ODMs – will drive even more IT hardware consolidation, as the silos in the datacenter disappear and the compute, storage, and networking markets blend into one software-defined infrastructure market. It will be challenging to survive as a best-of-breed company in only one or two silos. Pressure will be on companies such as EMC, NetApp, Juniper, Cisco, and Lenovo to further build out their portfolios. Our prediction? In 2015, two or three of the top worldwide vendors across IT hardware – such as HP, IBM, Cisco, Dell, EMC, NetApp, Oracle, Hitachi, Fujitsu, Lenovo, NEC, F5, Juniper, and Brocade – will merge, be acquired, or be involved in a major restructure/spin-out (setting the stage for merger or acquisition).
- **The door will open wider for ODM/OEM strategic partnerships and M&A.** The strong skew of capacity growth toward cloud SPs, and the increased sourcing by SPs from ODMs, is squeezing the OEMs. To capture growth back, OEMs must compete directly (and better) with ODMs for SPs' business. There will be shrinking room for OEMs that don't have high-volume, low-cost manufacturing (à la ODMs) and can therefore capture more SP business. In 2015, we predict more "strategic partnerships" between ODMs and OEMs (à la HP-Foxconn), and – perhaps – an acquisition/merger across these lines, bringing ODM manufacturing efficiencies with OEM design/architecture innovation. If you're going to stay in the server business over the next decade, you have to be all the way in – going after the highest-growth segments. ODMs to watch include Quanta Computer, Wistron Group-Wiwynn, Inventec Corporation, Compal Electronics, GIGABYTE TECHNOLOGY, MiTAC, Foxconn Technology Group, and Flextronics.

8. 3rd Platform Industries

The movement of IT into the fabric of how industries operate – way beyond the traditional boundaries of datacenters and IT departments – is by far the most dramatic aspect of the 3rd Platform. The logical conclusion of the 3rd Platform's innovation stage is the reinvention – and continuous transformation – of every industry on the planet. We believe the 3rd Platform is not just a technology innovation platform; it is fast becoming a *business* innovation platform.

Here are just a few of the developments we predict in 2015 for 3rd Platform–driven transformation of major industries:

- **One-third of leaders in virtually every industry will be disrupted by competitors by 2018** – newcomers and established – that leverage the 3rd Platform to innovate new offerings, reach new customers, radically expand supply and go-to-market networks, and disrupt their industries' cost and profit models. If you're paying attention, you'll notice that this is a repeat from IDC's 2014 predictions. Well, we're doubling down on this one. This prediction – focusing on the massive opportunity and threat the 3rd Platform represents to leaders in every industry

– is the fundamental one that really drives all the other predictions in the sections that follow. If you don't believe this prediction, you can stop reading the rest.

- **The number of industry platform communities will double in 2015.** This is a *continuing* prediction, but it is a tremendously important – and evolving – one. In 2015, the roster of industry platforms (and surrounding innovation communities) that are becoming the epicenters of industry innovation, growth, and disruption will continue to rapidly expand. As a reminder, IDC defines industry clouds as industry-specialized cloud-based data and services platforms – usually created by leaders within the industry – providing access to industry data and innovative services (many built around data analytics). Importantly, these platforms are typically open to third-party developers that further extend the value of the platform provider's services and data. There are already at least 30 such industry platforms in the United States alone, from such companies as GE, NYSE, Illumina, Johnson Controls, John Deere, UnitedHealthcare, Boeing, Staples, Best Buy, Walgreens, Tesco, Bloomberg, NASDAQ, FICO, and Soltra. IDC predicts that that number will easily double in 2015. Last year, we predicted that there would over 100 industry platforms by 2016 – that's looking like a "layup" right now. However, it's important to note that we also predict some "two steps forward, one step back" motion in this market. In 2015, we'll also see some of these ventures struggle and retrench – in many cases, looking for savvy technology partners to help them regroup and relaunch.
- **Numerous 3rd Platform–driven industry disruptions will emerge in 2015.** Some notable examples we'll see in financial services, government, and retail are:
  - **Alternative payment networks will rise and begin to disrupt/reshape financial services.** In 24 months, 2% of global payments will be routed over "alternative" payment networks, such as social and peer-to-peer platforms (including cryptocurrencies, like bitcoin). Large fintech vendors are all exploring cryptocurrencies and how they may fit into their future strategies. The New York Department of Financial Services (DFS) will issue its "final final" regulatory framework for a "BitLicense" for bitcoin providers and developers. Due to DFS' oversight of banks in New York, that framework will be important. We expect DFS will continue to have a light regulatory touch, even carving out exceptions for developers and start-ups with a transitional license. Federal regulators in the United States will begin taking a harder look at cryptocurrencies. The bottom line: It's still early days, but digital currencies are no longer being treated as a fringe idea.
  - **Cities will play big roles in the rollout of the IoT.** Competing to build innovative and sustainable "smart" cities, 2015 will be a year of expanded investment and strategic development into embedding IoT into city safety, public works, transportation, and more. IDC predicts that, by 2018, cities and metropolitan areas will represent more than 25% of all government external spending on deploying, managing, and realizing the business value of the Internet of Things. In contrast to the 2nd Platform world in which federal/central and large provincial/state governments typically dominate public IT investment, the IoT is inspiring a surprising amount of urban innovation.
  - **Retailers will drive material revenue growth through 3rd Platform systems in 2015.** By the end of 2015, at least 25 retailers will have used location-based services (LBS) to increase same-shopper sales by 5% via cloud-based, analytics-driven mobile engagement. 2015 will be an explosive growth year for LBS in the retail industry. With LBS near-real time, *in situ* personalized and contextualized relationships become possible. The next challenge is near-real-time competitive pricing. As a result, by the end of 2015, product intelligence (PI)

will inform 60% of the top 10 ecommerce retailers' pricing decisions and drive mainstream adoption of high-velocity pricing.

9. Innovation Accelerators

We've already talked about the growth-accelerating impact of cognitive/learning systems (refer to prediction number 5 [Big Data]) and the Internet of Things (refer to prediction number 6 [Internet of Things]). Two other critically important innovation accelerators we see emerging in 2015 are 3rd Platform-optimized security and 3D printing:

- **3rd Platform-optimized security.** "3rd Platform optimized" means security technologies and services that are adapted to the massive scale and expanding scope of systems and information that need to be secured. In 2015, we'll see key developments in securing the edge (mobile devices) and the core (cloud-stored data), as well as a growing use of big data feeds and analytics to stay ahead of threats:
  - **Biometric security will secure the mobile edge of the 3rd Platform.** In 2015, we predict that 15% of mobile devices will be accessed biometrically (e.g., through fingerprints, face recognition). By 2020, we predict that will expand to over 50%, happily reducing the use of 2nd Platform-style username/password security by the same percentage.
  - **Encryption in the cloud will become default practice.** Data proliferation is out of control. Enterprises need to have some level of assurance that their data is only used as it should be and that it is in compliance with regulatory requirements. Encryption is the best way to accomplish this. Endpoint encryption is already a staple in many organizations, but it is in the cloud where data is much more difficult to manage. Amazon Web Services just introduced its Key Management Service, bringing low cost and simplicity to securing data at rest in the cloud. In 2015, we expect other leading cloud service providers to follow suit. By the end of 2015, we predict 20% of regulated data in the cloud will be encrypted. By 2018, we predict that will quickly rise to 80%.
  - **Threat intelligence will be a killer data-as-a-service category.** As discussed in prediction number 5 (Big Data), data as a service (and value-added content) is one of the most strategic growth areas we expect to break out in 2015. And threat intelligence data feeds will emerge as a "killer" category within this growing value-added content market. Threat intelligence data services provide a better understanding of the active tools, targets, and campaigns of IT and communication system attackers and are a key component in predicting the probability of specific attacks. IDC predicts that, by 2017, 55% of enterprises will receive tailored threat intelligence information. Dell, IBM, HP, Cisco, Verizon, and AT&T, as well as security specialists Symantec, AlienVault, Trustwave, ThreatTrack, Trend Micro, McAfee-Intel, FireEye, and BAE Systems and industry-focused organizations like FICO and DTCC, already offer some form of threat intelligence service or feed. Expect the large global cloud services providers (Amazon, Microsoft, and Google), as well as industry platform players, to join the fray; they, along with the large network providers (AT&T, Verizon, et al), could prove to be in the best position to gather, analyze, and monetize this data.
- **3D printing competitors will lay the groundwork for a major shakeout and step-up in 2016.** How important is 3D printing? By 2020, 3D printing will enable "produce on demand" scenarios for more than 10% of all consumer purchases. In 2015, we'll see spending surge by 27% to $3.4 billion. More significantly, we predict a huge amount of "behind the scenes" activity in 3D printing by the conventional document printing companies. HP has publicly debuted its Multi

Jet 3D printer, slated for 2016 introduction. Canon, Ricoh, and Epson will spend 2015 developing their own 3D printing portfolios with the hope of making a debut in a similar time frame. In spite of all the hype and anticipation, 2015 will primarily be a year of R&D and product prep, targeting commercial and industrial markets, before the consumer market. The big leap in innovation will take place in materials: being able to address multiple materials in the same object, multiple colors, more metals support, and clear/translucent output as well as more sophisticated finishes like wood- or marble-like output. As the 2D giants come in to the lucrative commercial market (about 8x the revenue as the consumer market), we predict a shakeout among the current players in the desktop consumer 3D market. Stratasys and 3D Systems, the two current market leaders, will continue a path of acquisition activity in 2015 as they attempt to scale up more quickly in anticipation of larger competitors. Of course, they will also be attractive acquisition targets themselves.

10. China

Anyone who thinks China's moderating GDP growth is diminishing China's impact on the ICT market better think again:

- **ICT spending in China in 2015 will exceed $465 billion, growing over 11% and accounting for a remarkable 43% of all industry growth.** Within the next 12–15 months, spending in China will pass by two important milestones: It will double Japan's ICT spending and exceed one-half of U.S. ICT spending.

  This rapidly growing scale of spending is nothing new, of course. But as the industry enters the 3rd Platform's innovation stage, China will be leveraging the 3rd Platform to climb toward a new level of global influence. Several related developments in China in 2015 will have major implications for the rest of the world for years to come.

- **China's domestic engines for global 3rd Platform leadership — mobile, online, social, and eshopping — will be roaring in 2015.** In mobile, online, and social technology adoption, China absolutely dwarfs the rest of the world — and IDC predicts that advantage will extend in 2015:
  - **In 2015, IDC predicts that nearly a half-billion smartphones will be sold in China** — three times that in the United States and about one-third of all worldwide unit sales. This growth will be further supported by the recent licensing of 40 additional mobile virtual network operators (MVNOs).
  - **Over 680 million people in China will be online** — many through both mobile devices and PCs. In 2015, that is 2.5 times the number in the United States. By 2016, China plans to grow urban access to broadband to 95% under the Broadband China Project; in 2015, we predict urban households will commonly have access to 20–100Mbps broadband speeds.
  - **Over 580 million people in China will use social networks in 2015,** compared with just 222 million in the United States. This is very significant, because social networking (along with online shopping) is clearly *the* "killer app" for driving adoption of the broader 3rd Platform technologies (mobile, cloud, big data).
  - **Online shopping in China is poised to explode.** Within two-and-a-half years, online shopping in China will exceed that in the United States; by 2020, it will equal the size of today's United States plus the next four largest economies.
- **China's cloud and ecommerce leaders will rise and challenge for global leadership.** Relative to its strong mobile and social technology adoption, China lags in public cloud adoption — it is

only ninth in public IT cloud spending, behind the Netherlands and a fraction of the size of the United States. However, we predict that China's astounding mobile, online connectivity, social networking, and ecommerce adoption will fuel explosive growth in China's cloud services sector — and that this will be accelerated more by the ecommerce and social players Alibaba (number 1 in ecommerce), Tencent (number 1 in social), and Baidu (number 1 in search) than what we've seen thus far from the telcos (e.g., China Mobile, China Unicom, and China Telecom) and major IT vendors (e.g., Huawei, IBM, Kingdee, Microsoft, and UFIDA). Consequently, we predict global IT cloud vendors will be banging on the doors of these ecommerce, social, and search leaders to build whatever partnerships they can in 2015. (Indeed, as we were in final development of these predictions, IBM announced a cloud services partnership with Tencent.) As we noted in prediction number 4 (Cloud Services), IDC predicts that — driven by their massive domestic market — one or more of these "Big Three" Chinese cloud-based giants will challenge Amazon, Microsoft, IBM, Google, and the other global IT cloud services players for a share of global market leadership over the next three to four years.

- **Chinese smartphone leaders will gain share in the smartphone market.** Previously, we noted that Lenovo, Xiaomi, Huawei, ZTE, Coolpad, and others are grabbing greater global share, driven by the massive domestic market. Chinese-branded smartphone manufacturers — over 24 of them — will collectively dominate the domestic market in 2015, with about 85% share of units sold. This will translate into about 40% of worldwide smartphone market share in 2015, up from 2014's 36%.
- **Massive 3rd Platform investment plans will be a core element of China's 13th Five-Year Plan.** In early 2016, the Chinese government will unveil its 13th Five-Year Plan, defining priorities and driving huge investments through 2020. That plan is being formulated now, with drafts and review cycles throughout 2015. IDC predicts that the new plan will be loaded with massive 3rd Platform-centered investments. Two areas of note — and that mirror 2 of our Top 10 prediction areas — are:
  - **Funding 3rd Platform–driven industry transformations.** Using technology — particularly 3rd Platform technologies — to reform existing industries (e.g., financial, education, healthcare, state-owned industries) and to accelerate strategic emerging industries (e.g., biotech, sustainable energy, advanced high-end manufacturing, alternative energy vehicles, new materials, next-generation IT) will be a key element of the 13th Plan. This means the Chinese government in 2016–2020 will accelerate its funding of domestic development of all of the 3rd Platform technology pillars and the aggressive consumption of these technologies to support digital industry transformations (see prediction number 8 [3rd Platform Industries]). To give a sense of scale, major projects within China's 12th Five-Year Plan typically involved hundreds of billions to trillions of dollars of directed public and private investment.
  - **Influencing/setting global 3rd Platform standards.** The Chinese government was greatly encouraged by the success of the TD LTE 4G mobile standard it championed, and we expect it will become more ambitious in influencing more of the key 3rd Platform standards over the next several years. China is developing five national standards for cloud computing. Chinese-sponsored IoT standards have been approved by the ISO/IEC JTC1. And, in September, the China National IT Standardization Technical Committee (CNITS) established a Big Data Standardization Working Group to develop big data–related standards. Given the scale and growth of the domestic market over the next five years, it's very likely these China-sponsored standards efforts will demand more attention from the global technology community.

ESSENTIAL GUIDANCE

To say that 2015 will be a pivotal year in the ICT industry is a gross understatement. Not only will we see the 3rd Platform finally reach large scale (one-third of all ICT spending and 100% of all growth), but we will see dramatic shifts as the 3rd Platform gears up for its innovation stage — in which a plethora of new solutions and services, ones that transform, expand, and disrupt every industry, are developed.

The enlarging scale of the 3rd Platform carries an obvious message: 100% of your strategic investments, innovation, and communication to the market should be focused on creating a sustainable (and hopefully, leadership) role for your organization in this new marketplace. (Some of you may remember that, several years ago, when the 3rd Platform was 20% of industry spending, we urged that you devote 80% of resources to that 20%. In hindsight, that looks like a pretty good recommendation.)

The dramatic shifts we highlighted throughout all of our 10 predictions categories are all about our key theme — accelerating innovation on the 3rd Platform. They group around some common, and challenging, themes:

- **Innovation is taking on a new character, that's about innovation at scale, velocity, and low cost.** With the expanding scale and scope of developer/innovation communities aggregating around every aspect of the 3rd Platform, your organization has to ask itself: How do we do a world-class job of innovating at scale, at velocity, and at low cost? And, related to this new era of innovation: Are we ready to "Amazon" ourselves, rapidly and repeatedly, before someone else does?
- **Living in the midst of innovation communities is "the new oxygen."** Attracting developers (aka, innovators, contributors, and makers) continues to be strategic battleground number 1 — more so than ever, in the innovation stage. If you're a "platform" player, you must attract a large-scale and productive community of developers to your platform. Otherwise, you can't compete with others' pace and scale of value creation and your growth will be "suffocated." And no matter who you are, you need to associate with others' innovation communities as well.
- **We are in a period of reassessment, and redefinition, of our organizations' core and sustainable capabilities for the 3rd Platform era.** If you are in a business in which you can't keep up with the scale, speed, and costs of innovation, those need to be jettisoned and partnerships forged with industry-best partners. This means spinoffs, divestitures, acquisitions, mergers, and deals and partnerships with "strange bedfellows" — maybe even companies that have been your mortal enemies.
- **Massive reconfigurations of value chains — in the IT industry and in every other industry — are under way.** This includes intermediation (someone getting between you and your traditional customer), such as the emergence of industry platform/community players that will become major conduits of IT innovation to the marketplace. Some intermediates may, in fact, be some of your best current customers. It also means disintermediation (pulling you permanently, and painfully, out of the value chain), such as the rising role of ODMs in the hardware business. It is essential to understand that the change is happening (that should be the easy part at this point) and what sustainable, profitable, and (perhaps) new roles in the new value chains are available to you.

The keys to sustainable, profitable, and (perhaps) new roles in the new value chains, of course, lie in the first three bullets in this section, all very challenging transformations: becoming a 3rd Platform-class innovator, creating and living in highly productive innovation communities, and understanding where your greatest ability to create value lies, for the next decade and beyond.

LEARN MORE

To see the rest of our predictions — as well as the dozens of IDC Top 10 Predictions documents that we will publish (and Webcasts we will host) in December and January, each focused on a different segment of the IT industry, visit IDC's predictions page at www.idc.com/research/Predictions15/index.jsp.

Related Research

- *State of the Market, 3Q14: IT Spending Review and Outlook* (IDC #WC20141106, November 2014)
- IDC Predictions 2014: Battles for Dominance — and Survival — on the 3rd Platform (IDC #244606, December 2013)

Synopsis

This IDC study offers IDC's broadest outlook for the year ahead in the ICT industry. 2015 will be a year of accelerating disruption, based on broadening adoption of the 3rd Platform's cloud, mobile, social, big data, and Internet of Things (IoT) technologies. 2015 will mark the 3rd Platform's shift to the "innovation stage," with an explosion of innovation and value creation on top of the 3rd Platform's foundation.

According to IDC Chief Analyst Frank Gens, "We are shifting into a new gear in the industry's adoption of the 3rd Platform, as cloud, mobile, big data, and the Internet of Things — and an exploding number of solutions built on them — will account for one-third of all IT spending and 100% of IT growth in 2015. Look for lots of vendor consolidation, 'strange bedfellow' partnerships, deathmatch battles for developers (and their apps), expanding cognitive/machine learning and IoT offerings, a growing focus on data supply chains, and skyrocketing influence for China."

About IDC

International Data Corporation (IDC) is the premier global provider of market intelligence, advisory services, and events for the information technology, telecommunications and consumer technology markets. IDC helps IT professionals, business executives, and the investment community make fact-based decisions on technology purchases and business strategy. More than 1,100 IDC analysts provide global, regional, and local expertise on technology and industry opportunities and trends in over 110 countries worldwide. For 50 years, IDC has provided strategic insights to help our clients achieve their key business objectives. IDC is a subsidiary of IDG, the world's leading technology media, research, and events company.

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