The sound of an old telephone ringing is rarely heard these days. However, in the Internet era, the number of ways people have to “reach out and touch someone” has exploded, and humanity is far more connected than could have been imagined even 20 years ago.

The science fiction of the 1960s is now an everyday reality. Students graduating from high school this year never knew a time when they couldn’t search the web or had to be tethered to a wired phone.

At the center of this revolution, the telecommunications industry has been transformed into a new thing. We at Jabian thought the time was right to share some of our insights into this ever-changing economic engine. To create our insights, we drew on the vast telecommunications experience of our seasoned professionals to get a sense of how the marketplace is evolving and how ongoing innovation potentially holds both significant value and risk for the future.

In addition, we conducted a survey from a large cross-section of telecom professionals and end-users alike to get a sense of how telecommunications is being understood, managed, invested in, and used. We looked for trends and themes that would provide industry leaders with insight into the current direction and future path of the industry. Our efforts identified some very interesting results.

Spend a few minutes with our report; we’re sure you’ll find some interesting insights. And even if the ring sounds different these days, when the future calls, you’ll be prepared to answer.
A New World of Telecommunications ... Our View

As shown in our Industry Trend Framework to the right, we organized our perspectives into twelve trends grouped into four domains.

**Buyers’ Power**
We start with this domain because it is the one most likely to have the greatest impact on the economics of this industry for the coming decade. Those who can take advantage and enable it will be winners.

**Market Dynamics**
These five trends within the ever-changing scope of “telecommunications” define table stakes requirements for all participants.

**Customer Applications**
Innovation is the fuel for the telecommunications engine. These five trends highlight the major avenues where innovation is changing how we live, and new models for business success.

**Legislation and Regulation**
The first eleven trends must be viewed in the context of this ever-present influence. Often viewed as a throttle on growth, there is a need for a safe and level playing field for all participants.

---

**Jabian's Industry Trend Framework**

---

**INDUSTRY TRENDS AND IMPACTS**

<table>
<thead>
<tr>
<th></th>
<th>1</th>
<th>4-5</th>
<th>8-9</th>
<th>12-13</th>
<th>18-20</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Introduction</td>
<td>Buyers’ Power</td>
<td>Secure Future</td>
<td>Mobile Money</td>
<td>Survey Results</td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>6-7</td>
<td>10-11</td>
<td>14-15</td>
<td>21</td>
</tr>
<tr>
<td></td>
<td>Our Framework</td>
<td>Commoditized Bandwidth</td>
<td>Internet of Things</td>
<td>Learning Anywhere</td>
<td>Conclusion</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Colossal Data</td>
<td>Virtual Planet</td>
<td>Connected Car</td>
<td></td>
</tr>
</tbody>
</table>

Each trend affects the industry at multiple levels. These icons indicate which levels are predominantly affected.
Buyers’ Power

Times have changed from when service providers offered customers a limited set of products to buy/subscribe. In 20 years, technical innovation has boomeranged to give buyers more power to influence...everything.

The power of the Internet has given customers the ability to make decisions previously unaffordable to them. As new competitors enter the industry, customer loyalty will continue to be challenged. Customers looking to experience and be part of the coolest trends will lead some service providers to make plays to change customer perception. Google, as is well known, recently entered the competitive landscape and created a drive for faster speeds. Service providers have a new, serious competitor bringing an established reputation from other business practices into their new venture. Google has shown a willingness to engage in the effort to establish additional physical networks — and to bring attention to that investment — while partnering with existing providers to complete the path.

Over the years, as seen in Comcast’s purchase of NBC Universal, the gap between content and service provider has closed. Other pairings between content and service providers will likely occur, bringing additional change and competitive dynamics to the industry, all in an effort to meet customer demands.

In a related vein, the evolution of device functionality continues to accelerate with impressive features such as video and audio translation, medical device capabilities, and ever-increasing processing speeds. In this landscape, new partnerships will emerge where investment in device capability is coupled with customer access to provide previously unforeseen partnerships and services. In 2007, Apple and AT&T demonstrated this trend when they introduced the first iPhone. New partnerships will continue to evolve as service providers seek differentiating factors and elements to “complete” their offerings in new markets.

Disruptive Competition

Well-established companies with solid reputations are expanding into the telecommunications industry. This is driving competitive reaction from existing players and fostering new partnerships as industry players move to position themselves amid a fluid landscape.

The competitive mosaic will require companies to partner in a myriad of ways. This will place a premium on a range of skills from strategic planning to negotiations to the complex program management required to deliver solutions that leverage a bundling of products and services from multiple service providers.

of telecom professionals indicated their company’s brand reputation was performing “very well” or “exceptionally well.” In comparison, they rated competitors 44 percent for the same question.

of telecom professionals indicated they would cancel their carrier-provided cable/TV service if forced to stop using a service or device.
The availability of 1GB+ speeds in select markets enables customers to surf, stream, and download on multiple devices at the same time without performance degradation. Many service providers are upgrading their networks to compete on speed. As a result, customers should benefit from competitive price points at both the high and low ends. Higher speeds will place an even greater emphasis on network performance and monitoring, and on service providers’ ability to leverage existing dark fiber, to time capital investment decisions, and to optimize deployment schedules.

Richer/heavier content begets demand for greater network bandwidth that encourages demand for richer/heavier content ... creating an ongoing cycle. Higher speeds enable customers to reach and consume content differently, on different devices, and in different locations. Business applications that use greater bandwidth (for example, telepresence, telemedicine, cloud data backup) will become more pervasive as well, leveraging faster speeds and adding pressure for even more bandwidth.

With faster speeds spreading across the United States, there will come a point in many geographies where bandwidth ceases to be a differentiator. Customers will subscribe to the product that meets their needs, rendering bandwidth an expectation rather than a bargaining point. (Anyone remember the days when PCs were priced and sold primarily on the basis of CPU speed?) Also, as evidenced in our survey results (see page 18), consumers aren’t willing to pay substantially more for significant speed improvements. The resulting pressure on efficient operations will also lead to an emphasis on economies of scale. This will, in turn, lead service providers to continue looking for opportunities to merge or combine operations in order to deliver at scale.

As bandwidth becomes more of a table-stakes consideration, service and equipment providers will have to leverage R&D capabilities to develop and deploy future-generation networking technologies. Price pressures will reward companies with the most efficient operational capabilities, including network management, fault tolerance, and load balancing. In addition, service providers must develop other means of competitive differentiation in order to stay relevant.

Commoditized Bandwidth

While some customers are content with a reliable 3MB connection, 1GB download speed for residential and business customers is already here. With increased network demand, broad availability of 10GB, 40GB, and 100GB services are inevitable. Ultimately, sufficient bandwidth will become a commodity expectation that powers new content and services.

PREDOMINANT IMPACTS

Commoditized Bandwidth

The benefits of Big Data have recently gained a lot of attention. But as bandwidth grows and a variety of applications emerge to share and use ever-increasing information, the resulting explosion in volume will transform Big Data into Colossal Data.

PREDOMINANT IMPACTS

Colossal Data

Colossal Data will reward companies that can manage data and quickly take a mature data analytics capability to the next level, partnering with related organizations to find insights and quickly act on them for a competitive advantage across a data value chain. The ability to effectively refine and adopt new strategies will enable companies to separate from those that just drown in excess data.
Secure Future

As digitization disrupts industries and more information is stored in the cloud, the trend consumers felt would have an impact on their lives.

Security threats were the #1 most important trend consumers felt would have an impact on their lives.

For a truly secure future, the array of service providers will need to lock down data stores and provide end-to-end security. Companies that can provide that assurance with proactive detection algorithms, while helping consumers effectively play their parts, will gain a leg up as a result.

PREDOMINANT IMPACTS

As the volume of digital information continues its exponential growth, organizations and individuals alike must stay increasingly vigilant to ensure a secure future. Hackers’ success at breaching data stores of all varieties is becoming all too commonplace, and the personal careers of both business and IT leaders can be forever damaged. Such breaches can also result in significant loss of consumer confidence and shareholder value. The only answer for organizations is to raise overall security capabilities, investing in both human and technological defenses.

Given that a new breach is making headlines almost every week, consumers are rightfully becoming more concerned about information security (see survey results on page 18). While newer security technologies are becoming more widely adopted (e.g., Apple TouchID, IPv6), consumers will ultimately have to become more aware of their own behaviors to ensure ultimate success.

Service providers will need to raise their game on both physical and logical security across all platforms and transactions to ensure integrity. Additionally, providers will start to educate customers on security practices to reduce the likelihood of potential breaches across a multitude of new vulnerability points. It is also very likely that new federal legislation will require service providers to store particular information for security and safety reasons. Debates are already underway regarding mobile device encryption, debates that pit the need for personal security/privacy against the need for law enforcement to investigate criminal activity.

The vast majority of security breaches target data at rest (stored) vs. data in transit. As such, education and best practices to manage their networks to avoid congestion for the benefit of all customers, and that charging service providers to store particular information for security and safety reasons. Debates are already underway regarding mobile device encryption, debates that pit the need for personal security/privacy against the need for law enforcement to investigate criminal activity.

The FCC recently passed a proposal to reclassify data service as a utility under Title II of the Communications Act. This reclassification applied to both ISPs and mobile carriers. As expected, consumer advocacy groups and content providers cheered the ruling, but most major service providers are critical, turning to the judicial system for relief.

Near-term customer impact from the decision is likely to be minimal, yet the longer-term view is much cloudier. This is largely a battle between content providers and the service providers that carry the content. Under the ruling, service providers cannot block, throttle, or prioritize traffic via commercial agreements, which, of course, benefits small startups and larger players such as Google, Apple, and Netflix. Service providers argue that they need the ability to manage their networks to avoid congestion for the benefit of all customers, and that charging content providers according to usage fulfills that objective.

Depending on how this ultimately unfolds, consumers could see higher pricing models for services. Tax implications of the ruling are still unclear. It is likely some states may use the ruling to levy fees under existing telecom regulations, which would raise customers’ Internet service rates.

Ultimately, regulators and legislators will struggle to keep up with the accelerating rate of change in the industry and to address trends related to security, data, and competitive dynamics. As a result, a cloud playing field might ebb and flow, but it will continue to affect the industry in the future.

Legislation and Regulation

PREDOMINANT IMPACTS

Just as the 1996 Telecommunications Act set the stage for today’s U.S. regulatory environment, industry players and consumers will ultimately have to become more aware of their own behaviors to ensure the health of the economy that depends so heavily on this industry.
Everyday items are gaining access to the network in order to send and receive data through "smart" devices. This trend exposes the telecommunications industry to an explosion of possibilities that will transform how we work and live.

**Internet of Things**

By connecting everyday products to the network, the Internet of Things empowers consumers to make data-based decisions, such as when to reorder groceries and other household items or when to schedule maintenance on an appliance. For example, Amazon Dash enables customers to reorder supplies with the touch of a button. The Internet of Things also has huge implications for businesses, which could dramatically collapse their supply chains based on intelligent inventory. In both cases, the key will be preventing the customer from becoming overwhelmed by the available data and enabling the change in behavior needed to operate successfully in this new environment.

The demand for increased bandwidth will be paramount for service providers as the number of networked items grows exponentially. Analytics and data management will be prevalent with the introduction of these new products into the network. As with other trends, security should be a top concern to prevent unauthorized access to usage and payment data. Introducing new products and devices to the Internet opens the door to new content to process the available data and drive the emergence of Colossal Data. Companies enabling this functionality must be cautious not to short-change security in order to launch first. Security considerations go hand-in-hand with the need to establish communications standards as devices from different industries come online. Enabling devices that cross industries will lead to difficult decisions to establish standards. Consumers may face incremental fees as their connected devices carry additional data on their service providers’ networks.

To paraphrase Marshall McLuhan, with the Internet of Things, “The device IS the message.” Telecommunication-enabled devices are expanding beyond the “normal” phone, TV, and tablet devices common today. Non-telecommunications companies are entering the market to integrate an unlimited range of products and devices — and give them intelligence.

**Virtual Planet**

Long the domain of science fiction, the technology to virtually connect humans to each other and to real or imaginary scenarios is becoming a reality. As a result, the trend of the “Virtual Planet” will accelerate. People will be able to connect with each other in ways that will further blur the line between reality and imagination. Applications in health care, education, communication, architecture, and entertainment have already emerged and will become more sophisticated and influential. This will bring benefits in areas as broad as geopolitics, time-to-competence, and traffic congestion. Any activity that benefits from virtual interaction will be a candidate for applications. But our new Virtual Planet could also bring disruptive changes to social norms and, ironically, lead to greater social isolation and disassociative behavior for some who choose virtual connectedness over reality. Additionally, as physical national borders become irrelevant to interaction, legal issues must be addressed. For example, if surgeons can perform robotically from other countries, do they need to be licensed in both their own countries and the patients’?

The Virtual Planet offers opportunities for providers of both content and connectivity. The demand for bandwidth and specialized hardware, coupled with the interconnected nature of applications, will create opportunities for partnerships that leverage context-sensitive data to deliver goods and services previously unimaginined.

People will be able to connect with each other in ways that will further blur the lines between reality and imagination.

The coming Virtual Planet will require companies to emphasize effective research and development to innovation. Companies with nimble cultures and an ability to quickly forge collaborative partnerships across a value chain, while creating intuitive solutions, will succeed in the fast-changing landscape on the horizon.
Mobile Money

Mobile platforms have enabled various financial tools for customers. From
payment made with a mobile device to banking and investing, customers have
convenient access to mobile money management tools, providing previously
unknown flexibility and speed. Businesses are enabled to operate virtually
anywhere at any time.

The convenience of finance-on-the-go enables customers to have more control and flexibility. For example, the ability to pay for a product on the go and have a receipt sent directly to an email address can help customers regain control of their time and allows easy access to the corresponding transaction record. Assuming security is upheld, the feedback on the ease of payment through this avenue has been positive. On-demand investment management and depositing checks with a mobile app are two additional functions that make customers’ lives simpler and more efficient.

As the conduit to the financial transaction (payment, stock trade, deposit, etc.), the service provider must also have a far-reaching network. For example, numerous small businesses have started in Africa, in part due to mobile payment functionality. By providing affordable service and an innovative means for collecting payment, Africans are seeing opportunities to pull themselves out of poverty.

Users can enable Mobile Money through an application with basic smartphone specifications (e.g., camera, the ability to download applications). Some Mobile Money solutions require an attachment to their mobile device (e.g., Square and Intuit GoPayment). As customer reluctance fades and devices evolve, Mobile Money capabilities will grow and emerge as the standard way to transact business.

If customers were forced to use only one device, the mobile phone was rated their No. 1 choice.

Health Solutions

The convergence of the untenable cost of health care and an aging/ailing U.S. population is driving new players into the health care space. Communications companies are powering this movement through increased reliability of devices, higher network speeds, and additional services.

Our aging and ailing population is driving an increased need to manage the costs of health care delivery. This trend, along with increased consumption and advancing technology, will drive care delivery to more affordable places — including the home. Patients will leverage wearables, medical devices, and virtual solutions for anything from primary care visits to management of chronic conditions.

Because these new telemedicine solutions make use of video and image files, they will require large and reliable bandwidth from service providers. Given the confidential nature of medical information being passed through the network, service providers will also need to address HIPAA-compliant data security for transmission of data, as well as at the device level. In time, more advanced solutions will leverage data analytics to proactively recommend health care interventions.

Many companies will continue to enter the health care market through health care platforms or a bundling of devices, platforms, and applications. For solutions to succeed in this space, they will need to meet the diverse needs of patients, providers, and payers, while effectively lowering cost. In addition to these tall demands, successful solutions will need to be more patient-centric and effectively address adoption barriers that typically come with medical applications and new technology. Collectively, these requirements will demand a broad set of business skills among participants in order to deliver useful and profitable solutions.

Patients will leverage wearables, medical devices, and virtual solutions for anything from primary care visits to management of chronic conditions.

Successful health solutions will require the involvement of payers and a variety of hardware and service providers, resulting in an emphasis on joint venture and complex program management skills. Given the confidential nature of the data and the volume of it that is required, companies will also need to emphasize security and adequate bandwidth. They’ll also have to overcome the tendency of customers to resist change as they confront this new technology.
The Internet opened the door to Learning Anywhere at any time many years ago. Today, learning happens everywhere, all the time, because information is available everywhere, all the time.

Learning Anywhere enables learners to achieve life goals and position themselves for career progression advancement in a more convenient setting. This includes synchronous or asynchronous activities that support a diverse range of activities, from homeschooling to corporate training to Massive Online Open Courses (MOOCs) to entire degree programs. In all settings, Learning Anywhere leverages telecommunications technology to overcome time and/or distance barriers to enable learning centered on the learner as the customer.

As with other technology trends, this avenue of learning continues to evolve. Service providers will need to provide greater download speeds as course content continues to mature to leverage recorded and live interactive video. Additionally, corporations are interested in interactive environments that may require partnering with content providers to create a more comprehensive environment for students. This content will continue to come from an array of sources, including e-learning vendors, curriculum specialists like Khan Academy, and accredited universities.

As streaming bandwidth and virtual reality technologies continue to advance, the power of the content will continue to improve, and the breadth of content will also advance.

Learning Anywhere

Learning Anywhere is the concept of leveraging telecommunications to provide instruction outside of formal classroom walls or fixed times. It provides the learner with the convenience of receiving an education at any time and in any place.

25% of post-secondary students are enrolled in distance education according to the U.S. Department of Education.

Many of the broader effects for Learning Anywhere will be societal, as instructors and learners both develop the skills necessary to succeed in a virtual learning environment. Content and service providers that can help usher in that change effectively will be rewarded, and educational institutions that don’t adapt will increasingly struggle.

The Connected Car

As transportation technology continues to evolve, our cars are increasingly being connected to the Internet and becoming rolling smart devices.

Both telecom professionals and consumers say the next step of advancement to the driverless vehicle will be more than five years from now.

These advancements for the Connected Car depend on connecting automobiles to secure, widely available, and fast telematics services. The manufacturer that can couple these services with a truly autonomous vehicle will have a significant competitive advantage.
IT IS NOT THE STRONGEST OR THE MOST INTELLIGENT WHO WILL SURVIVE BUT THOSE WHO CAN BEST MANAGE CHANGE.

CHARLES DARWIN
The telecommunications industry is vast.

Over the past two decades, this industry has been transformed into something that its founding fathers would barely recognize – yet it remains one of the most fundamental and critical components of the global economy.

Jabian surveyed groups of consumers and telecom professionals, seeking to gather perspectives on the industry, competition, current trends, and hot topics. Our goal was to understand how the ever-changing dynamics (and definition) of the telecommunications marketplace are affecting consumer behavior and telecom professionals’ decision-making. Here is what we learned.

Survey Results

When asked to define “what is telecommunications to you,” respondents said the following:

- **76%** Mobile Phone Service
- **70%** Internet Access
- **65%** Landline or VoIP Phone Service
- **47%** Social Media
- **43%** Apps on Smartphones
- **41%** TV/Cable Service
- **40%** Internet Content
- **39%** Online Banking
- **36%** TV Content

When asked where their companies make the best use of data and analytics, telecom industry professionals said “customer service/customer experience” was the best area, while “billing” was the worst.

Consumers agreed companies should spend the least amount of time on bundled options.

The top three telecom trends consumers say will most affect their lives:

1. Digital/Cyber Security
2. A la Carte Options Instead of Bundled Deals
3. Increased Demand for Streaming Service

Not surprisingly, when asked for the top three areas where their telecom companies should invest the time and resources, consumers said:

- **58%** Network Investment
- **58%** Customer Service
- **79%** Better Pricing

Telecom industry professionals rank the top three areas where they should focus time and resources:

1. Customer Service
2. IT services and support
3. Research and development

Telecom professionals say these are their company’s highest priorities:

- **52%** Customer Service
- **27%** Growth opportunities/MA
- **12%** Operations
- **9%** New product/service development

When asked to rank their competitors on the same scale, telecom industry professionals ranked their competitors this way:

1. Customer Service
2. Innovation
3. Brand/Reputation
4. Price
5. Quality of Service
6. Value to Customers

When asked where their companies make the best use of data and analytics, telecom industry professionals said “customer service/customer experience” was the best area, while “billing” was the worst.
The future is coming fast.

The advent of nearly ubiquitous online connectivity has fueled a transformation of consumer choice and power. The pace and scale of that change have been substantial and will only accelerate as our use of this connectivity grows exponentially. This future will indeed be challenging, but full of opportunity and promise for those ready for it.

If they could add connectivity to one product or service in their lives through telecom technology, consumers would choose:

- 31% Home Security
- 25% Automobile
- 17% Health care products/services
- 14% Retail/shopping experience
- 11% Kitchen appliances
- 2% Other

 asked to rank attributes of their current telecom provider, consumers ranked them the following way:

1. BRAND/REPUTATION
2. QUALITY OF SERVICE
3. INNOVATION
4. VALUE TO CUSTOMERS
5. PRICE
6. CUSTOMER SERVICE

If forced to stop using one of the following, consumers said they would cut:

- 42% Tablet
- 32% Carrier-provided cable/TV service
- 10% Computer
- 9% Mobile phone
- 7% Automobile

When it comes to upgrading to faster 1G+ speeds, consumers would:

- 41% Not pay more
- 37% Pay a 10% premium
- 15% Pay a 25% premium
- 7% Pay more than a 50% premium

Consumers subscribe to the following services:

- 46% Internet service at home
- 36% Landline phone service
- 21% Personal cloud services (Dropbox, iCloud, etc.)
- 11% Streaming video (Hulu, Netflix, etc.)
- 75% Wireless/mobile service
- 44% Traditional cable TV

If forced to use only one of the following, consumers said they would use their:

- 42% Mobile phone
- 39% Computer
- 13% Carrier-provided cable/TV service
- 6% Tablet

1 TELECOMMUNICATIONS INSIGHTS
About Jabian’s Telecommunications Experience

Jabian Consulting provides strategic consulting services to leading companies operating throughout the telecommunications ecosystem. Drawing on their many years working in the industry, members within the Telecommunications Group at Jabian deliver solutions to drive growth and increase profitability.

About Jabian

Jabian Consulting is a strategic management and technology consulting firm with an integrated approach to creating and implementing strategies, enhancing business processes, developing human capital, and better aligning technology—ultimately helping clients become more competitive and profitable. Jabian blends functional expertise, industry knowledge, and senior experience to think strategically and act practically. It’s a Strategy that Works.

For more information, visit www.jabian.com.