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Connected Services //

CREATING A COMMUNITY
AROUND DATA



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Introduction and Summary

Losing asset experts due to retirement is a much-discussed topic in the energy industry, and it is really happening.

Nearly every asset owner who participated in the research shared in this paper—including those in industrial equipment, green tech, and oil and gas—has already lost experts and expects to lose more due to retirement in the next five years.

Companies are replacing these retiring asset experts with new, often less experienced employees, but this often isn't enough to effectively manage the **increasingly complex asset systems coming on line today.**

As a result, asset owners are also starting to turn more to outside service providers, along with increasing sensor, data and analytics capabilities.

Through a survey of more than 400 asset owners and service providers, this paper explores how **building a community of shared data and analytics among asset owners and service providers is becoming increasingly important to address the next generation of asset needs.**



Key findings from the research include:

Nearly every organization had lost expertise due to retirement.

On average, 79% of industrial equipment, green tech and oil and gas asset owners had lost up to 25% of their asset experts in the past five years.

Organizations are starting to turn to more advanced technologies and analytics to deal with skill gaps due to retirement.

Automation and controls are important (56%), however, only 25% of asset owners are looking toward more rigorous analysis with expanded databases to replace lost asset expertise. This option has more potential than the market currently understands.

Nearly **two-thirds** of service providers believe that sharing and analyzing asset data with their customers plays an important to extremely important role in their services business.

An **overwhelming majority** of service providers see the importance of sharing and analyzing asset data with customers **increasing over the next five years (87%).**

Asset owners are very comfortable sharing their data with service providers.

Green tech asset owners were the most comfortable, with 71% very comfortable and 10% extremely comfortable with sharing data.

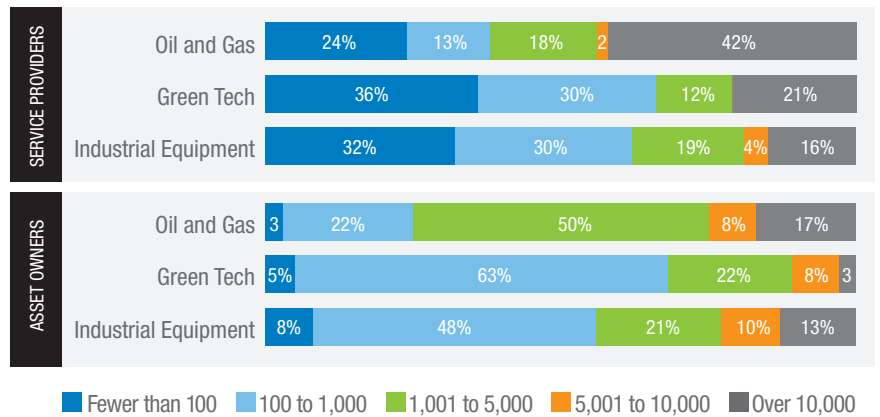
Nearly every service provider said at least some of their customers are sharing asset data with them today (95%).

Research Participants

To better understand how organizations are building communities around data and analytics, we studied three groups, which included both asset owners and service providers:

- **Industrial Equipment**, including Power Generation, Wind, Solar, Energy Storage and Fuel Cells
- **Green Tech**, including Power Generation, Pumps, Compressors, Large Mission-Critical Assets
- **Oil and Gas (Upstream)**

Figure 1 // Company size by number of employees



For each of these groups, we received the following numbers of online survey responses:

ASSET OWNERS:

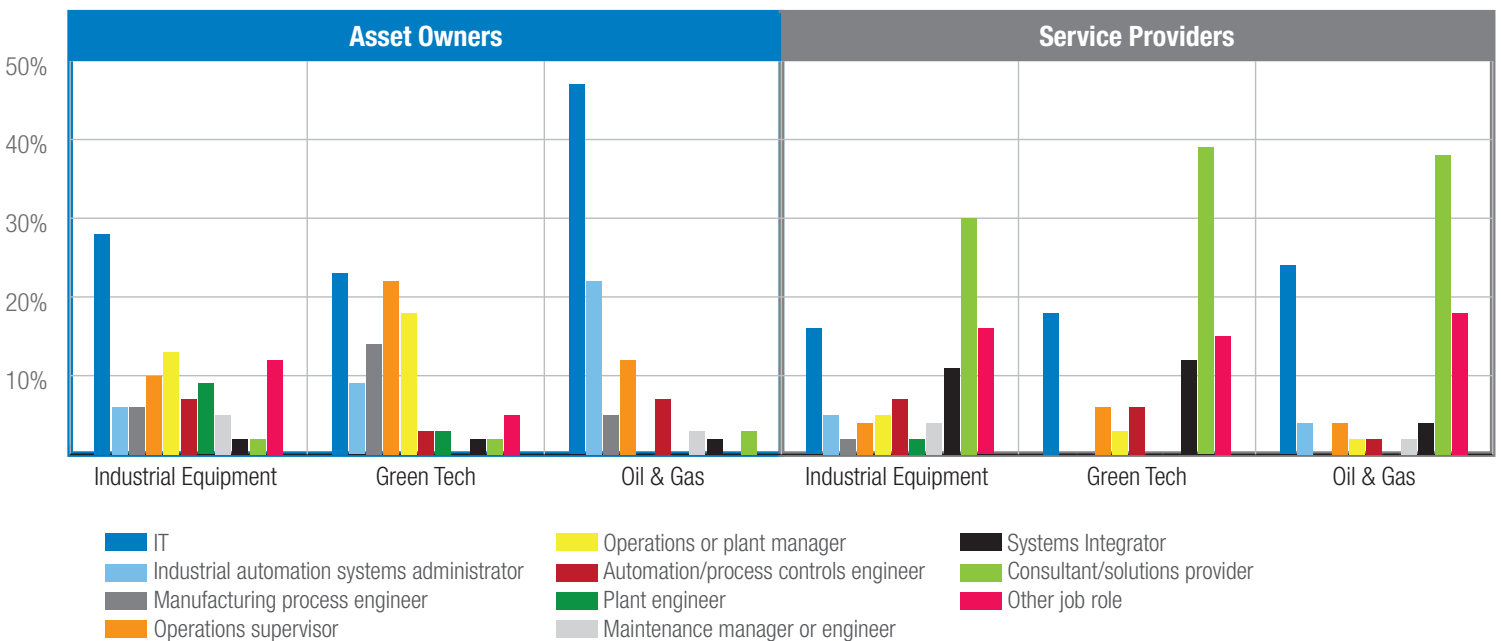
- **Industrial Equipment (164)**
- **Green Tech (45)**
- **Oil and Gas (60)**

SERVICE PROVIDERS:

- **Industrial Equipment (57)**
- **Green Tech (33)**
- **Oil and Gas (45)**

Figures 1 and 2 show some key industry and respondent demographics. For asset owners, IT was the most prominent job role. And on the service provider side, Consultant/Solutions Provider had the highest number of respondents.

Figure 2 // Respondent job responsibilities



Retirement is an Opportunity for Change

The energy industry has talked a lot about losing asset experts to retirement, and it is confirmed by our research which points to the trend continuing in the coming years.

Nearly every organization that participated reports that it had lost expertise due to retirement. On average, 79% of industrial equipment, green tech and oil and gas asset owners have lost up to 25% of their asset experts in the past five years. (Figure 3)

The industry will continue to lose experts. [In our 2015 study](#), 89% of asset owners expected to lose at least some of their experts within the next five years to retirement. Over the past year and a half, the number jumped up to nearly everyone (99%). Overall, the predominant amount of asset owners expects to lose up to 25% of their asset experts to retirement in the next five years (76%). (Figure 4) These lost experts have expertise in areas such as: asset performance, operations and maintenance, and asset lifecycle management.

How will asset owners replace this lost talent? They plan to use a combination of methods, starting with building the skills both inside and outside their organizations. Approximately 75% plan to hire new employees and provide additional training for staff (57%). Organizations are also looking to bring in outside resources with 65% planning to use third-party providers.

Organizations are also starting to turn to more advanced technologies and analytics. Automation and controls are important (56%), however, only 25% of asset owners are looking toward more rigorous analysis with expanded databases to replace lost asset expertise. (Figure 5)

This option has more potential than the market currently understands. As analytics systems become more efficient due to the introduction of new technologies and growing data sources, they will allow asset owners more opportunities to gain insights from their data.

Figure 3 // Asset Owners percent of asset experts retired in **past** five years

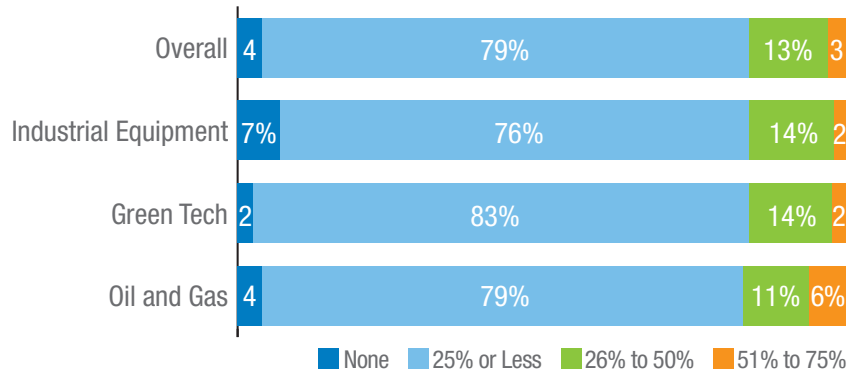


Figure 4 // Asset Owners percent of asset experts to retire in **next** five years

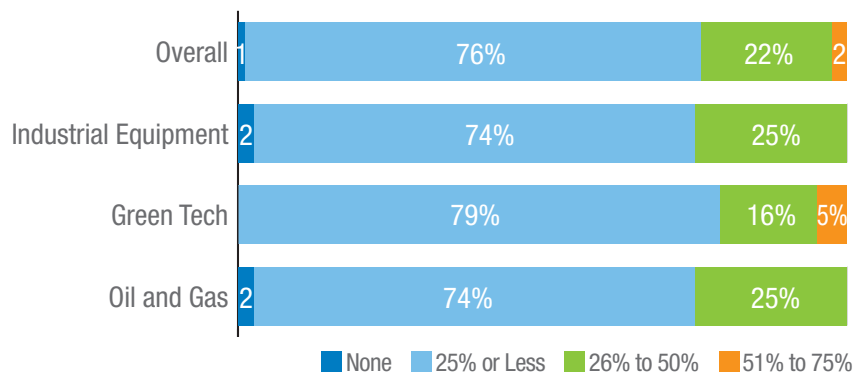
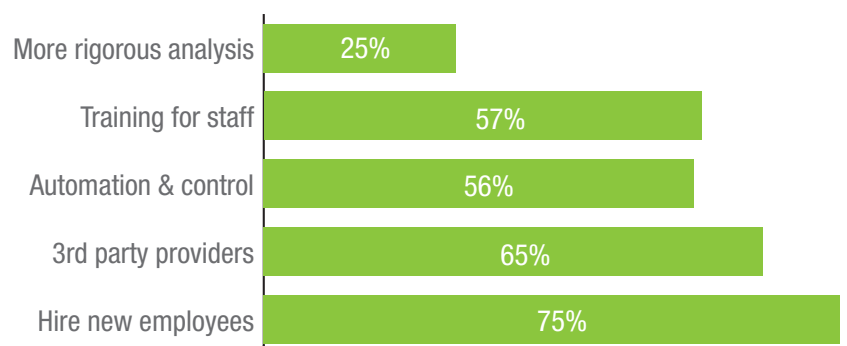


Figure 5 // Asset Owners methods to address retiring experts



Technology Investments Are Happening

Although the use of more rigorous analysis is just beginning to grow, a strong foundation is being laid for the use of more, and more advanced, data analytics to better maintain diverse sets of assets.

One area where we're seeing planning and investment is in the Internet of Things (IoT). A number of asset owners are in the planning stages when it comes to IoT initiatives (41%). Green tech asset owners' IoT initiatives are the most mature, with 45% of respondents reporting that their systems are operational. In contrast, just 11% of industrial equipment respondents reported large-scale deployments, but 26% of them reported proof of concept (POC) in testing. Oil and gas companies are lagging, with 50% being in the planning stage and only 8% with a successful POC and plans for production rollout. But investments are moving forward and these sensors will bring incredible amounts of data that can be leveraged for analysis. (Figure 6)

On the service provider side, we're seeing a strong interest in and use of more advanced sensor and data collection methods. Most service providers are using remote, automated data collection with real-time analytics capabilities for at least some of their work. Approximately 72% of service providers in green tech use this method, 49% in oil and gas, and 55% in industrial equipment. Some companies are still using traditional methods like using pen, paper, and clipboards to collect data, but most are shifting toward digital data collection. (Figure 7)

Both service providers and asset owners are leveraging more advanced sensors and networks, and there are opportunities to better connect these efforts. **"You've got to keep on improving. You can't just stay status quo. An important part of improving is to implement or harness new technologies,"** said the manager of electric distribution engineering and reliability at a large northern U.S. utility.

Sensor Challenges // An Asset Owner Perspective

"The most formidable challenge that we have is old thinking. We still have too many employees who tell you: 'Why would I need a sensor on this thing? I can look at it and tell you whether it needs maintenance or not.' Or, 'I can get up close and smell and tell you whether it's overheating or has overheated, or whatever.' There's still too much of that here. **The other challenge is being able to get the appropriate sensors affordably distributed across our asset base so that we can collect the real-time information back from those assets is the second biggest hurdle we're facing today."**

- IT architect, large U.S. Midwest utility

Figure 6 // Asset Owners maturity of IoT initiatives

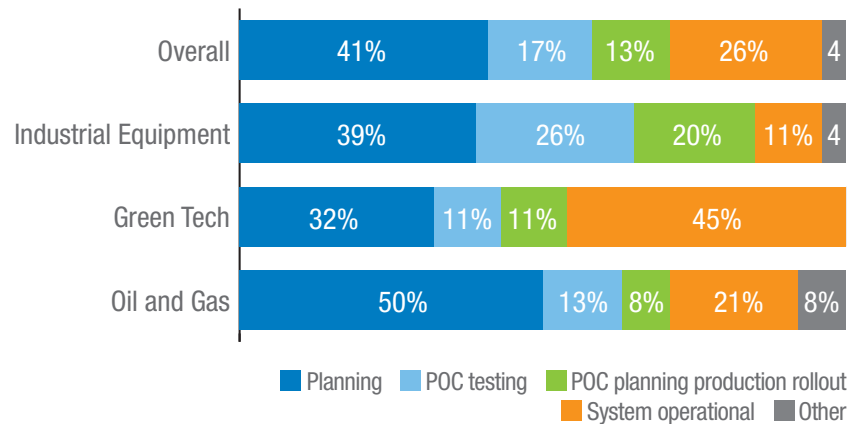
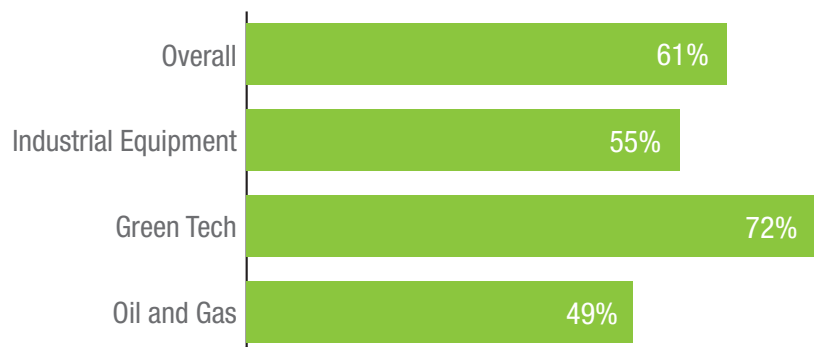


Figure 7 // Service Providers who said they used automated data collection with real-time capabilities to manage assets



Opportunities to Share Data and Insights

Sharing data and analysis with customers is important for service providers, and will only continue to increase in importance. Three-quarters of service providers believe that sharing and analyzing asset data with their customers plays at least a moderate role in their services business, and nearly two-thirds believe it plays an important to extremely important role. Green tech service providers embrace this opportunity the most, making it the leading industry in data sharing and analysis with customers among the three we studied. (Figure 8)

An overwhelming majority of service providers across all industries see the importance of sharing and analyzing asset data with customers increasing over the next five years (87%). This is likely due to the increasing complexity of data and the difficulty for the customers to fully understand and analyze the data themselves. (Figure 9)

So, service providers are embracing the opportunity to share and analyze data with their customers, but how do asset owners feel about sharing data?

Data Ownership // A Tip from a Service Provider on Sharing Data and Analysis

“The first aspect of sharing data is establishing that ownership of the information, and once you establish the ownership of that information, everything else kind of becomes easy. For instance, where we monitor a customer’s site, we recognize that information is theirs. Which means that we need to sign a non-disclosure agreement for the information coming out of that equipment, and we need to protect it when it gets over into our firewall. **We don’t exchange the information with them. We borrow the information from them.** It’s always their information. And when we approach it from that perspective, it tends to work very well.

“What we’re doing is borrowing their data, doing some transformation to turn it into information, and essentially giving them their data back in the form of information. We can share it real-time. **We can share it as a reporting tool, or we can share it after the fact.**”

- Director, Engineering, large U.S. technology provider

Figure 8 // Service Providers role of sharing/analyzing data with customer

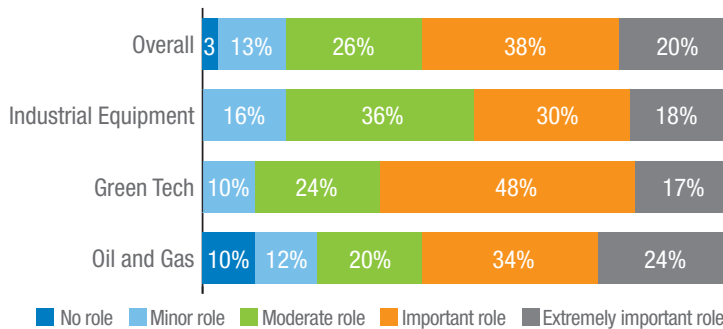
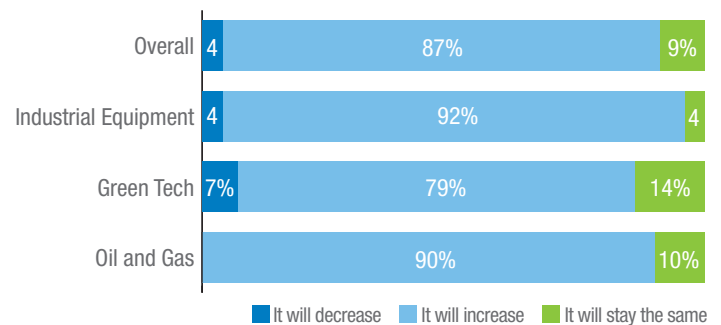


Figure 9 // Service Providers change in importance of sharing/analyzing data in the next five years



Asset Owners Embrace Data Sharing

Overall, asset owners are very comfortable sharing their data with service providers. Green tech asset owners were the most comfortable, with 71% very comfortable and 10% extremely comfortable with sharing data. Industrial equipment owners were the least comfortable, with 18% being slightly comfortable, 28% being moderately comfortable.

We have seen growth in comfort even over the past 18 months. [In our 2015 study](#), 14% of oil and gas organizations said they were very comfortable with sharing data compared to 62% in this study. There appears to be a mutual understanding of the importance of sharing data among different partners. (Figure 10)

In fact, we find that many service providers already receive asset data from their customers. Nearly every service provider said at least some of their customers are sharing asset data with them (95%). Overall, 35% of service providers say up to 25% of their customers share asset data. There is consistency across industries when it comes to the number of customers already sharing asset data. For example, nearly a quarter of service providers in oil and gas, green tech, and industrial equipment report that 25% to 50% of their customers share asset data. (Figure 11)

With increasing comfort of asset owners sharing data with trusted service providers, we expect the percentages of those sharing data with service providers to only increase in the coming years.

Figure 10 // Asset Owners comfort with data sharing

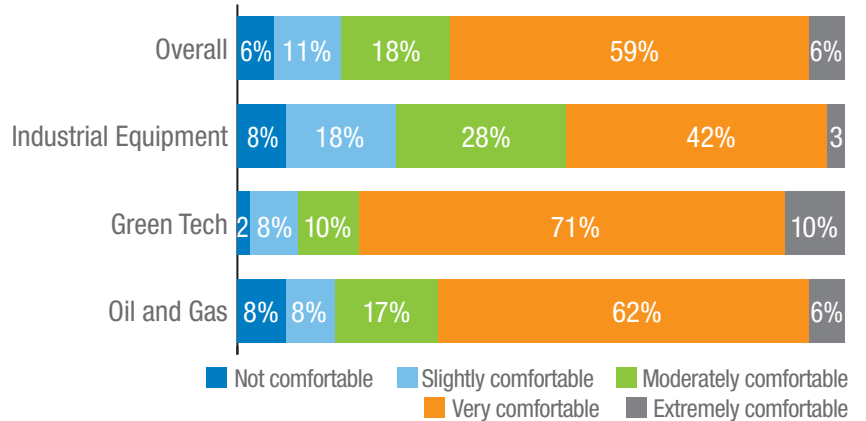
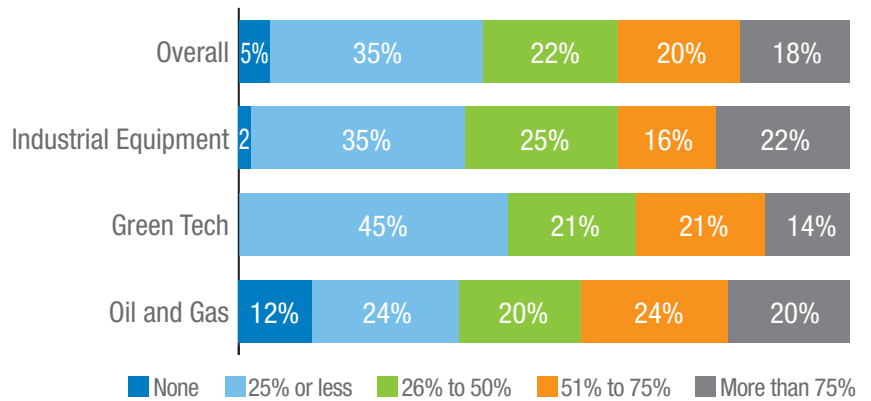


Figure 11 // Service Providers percent of customers already sharing data



Challenge and Opportunities

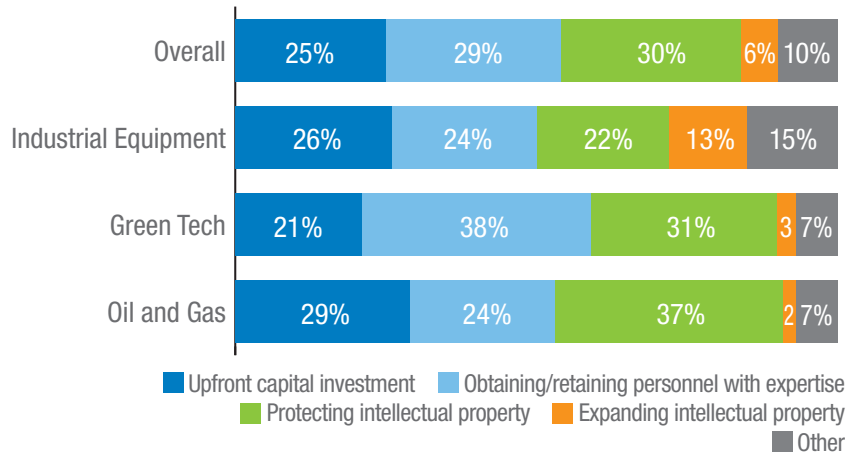
There are significant opportunities for increased data-sharing and analysis, but there are still challenges to moving forward on a larger scale.

Interestingly, there is no one hurdle that jumps out of the research—service providers face a variety of challenges. The biggest hurdle service providers face with providing better data connectivity and analytics with customers is **protecting intellectual property**—service providers in oil and gas are most likely to be dealing with this challenge with 37% of them listing it as their biggest hurdle.

The second biggest hurdle is **obtaining and retaining personnel** with the expertise to perform services; 38% of green tech and 24% of both oil and gas and industrial equipment service providers report this challenge.

Another issue for service providers is the lack of upfront capital investment. The top two industries combating this issue are oil and gas (29%) and industrial equipment (26%). (Figure 12)

Figure 12 // Service Providers biggest hurdle to delivering better data connectivity



Next Steps

There are certainly challenges with delivering greater data connectivity for customers, but the research revealed that companies in several industries are beginning to seek great connectivity—and service providers are responding to those needs.

As confirmed by our [2015 research](#) as well as this study, these demands will continue to increase in the coming years, and the concept of building real-time, secure data communities among asset owners and service providers will become increasingly common.

With these continuing changes, it is important for service providers to:

- Deeply understand customer needs around their loss of technical asset experts, and truly partner with them to find ways to help fill those gaps in personnel expertise.
- Remember that customers are increasingly open to opportunities to share data and analysis with your organization. Take the time to truly educate customers about the potential of these opportunities, and how to best take advantage of them.
- IoT and the increased use of sensors can offer your customers new ways to embrace increased access to data. Your customers are likely in at least the planning stage right, and now is the time to assist them with planning the right approach to the significant technology investments.



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