

Five Best Practices of Leading IoT Adopters

New survey reveals the changing face of enterprise IoT adoption and the approach taken in innovative deployments.

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Background

This report is based on a survey conducted for [Oracle Communications](#) by independent industry analyst Transforma Insights in May 2021.

The survey covered 800 respondents in Australia, France, Germany, Mexico, Spain, Switzerland, UK, and US. All held recommender or decision-maker roles for deploying IoT, with specific job titles of General Manager, Vice President, Director, or Senior Manager within Strategy, Operations, or Technology/IT. Minimum company size for respondents was 500 employees (1,000 in the US).

Responding organizations had all implemented, or were in the process of implementing, an IoT project supporting one of the following:

- **General Enterprise IT:** Enterprise Resource Planning (ERP); Supply Chain Management (SCM); Enterprise Asset Management (EAM); Field Service Management (FSM).
- **Construction, Architecture, Engineering, and Real Estate:** Project Portfolio Management (PPM); Building Automation System (BAS), Building Management System (BMS), Building Automation and Control System (BACS), Building Energy Management System (BEMS), Facility Management System (FMS), Energy Management and Control System (EMCS), Integrated Building Management System (IBMS); Integrated Workplace Management Systems (IWMS); Construction collaborations or Building Information Modelling (BIM) common data environments.
- **Utilities:** Advanced Metering System/Infrastructure/Reading (AMS/AMI/AMR); Utilities asset management systems (other than EAM); Network management software including: Outage Management System (OMS), Demand Response Management System (DRMS), Distributed Energy Resource Management System (DERMS), Advanced Distribution Management Systems (ADMS).
- **Healthcare:** Clinical trial management software; Electronic Medical/Healthcare Records (EMR/EHR); Hospital Management Software.
- **Retail/Wholesale:** Point of Sale (POS); Warehouse Management System (WMS); Inventory management and optimization; Merchandising systems.
- **Public safety and Government:** Computer Aided Dispatch; Records Management Software; Evidence Management Systems; Video recording/management.

The 800 survey respondents represent some of the most sophisticated deployers and deployments of IoT, based on being required to be integrating IoT data from one of a set of pre-defined advanced use cases. As such, the perspectives and opinions shown in these results can be considered the cutting edge of IoT, illustrating trends that we can expect to become standard practice in the market over the coming few years.

The survey asked questions about both a single specific project and general attitude towards deploying IoT. The responses were analysed relative to geography, company size, industry, and phase of project, among other things, to determine the key trends around all aspects of IoT deployment, including connectivity, use of data, and attitudes towards commercial relationships. This report takes that analysis and presents a summary of the key findings and a set of actionable recommendations for those organizations pursuing advanced IoT deployments.

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Key Recommendations

Based on the experiences of the top tier of IoT adopters as outlined in this survey, we make the following recommendations to enterprise IoT adopters.

1

Don't limit yourself to non-critical systems

The premier league of IoT adopters that we have surveyed are aggressively adopting IoT for critical systems, including those that directly touch their customers. There has been a tendency to “play it safe” with IoT deployments and look for low-hanging fruit, particularly in non-core parts of the business. Top adopters have turned that on its head and are overwhelmingly focused on highly transformational projects.

2

Connectivity should be baked in

As it becomes more mature, IoT connectivity is increasingly becoming an opaque part of IoT solutions and offerings. Connecting a device is just the start, and no longer the most challenging part of a solution. Any IoT solution you buy will increasingly have connectivity as just a feature.

3

Work out what you need to do with your data

Considerations of data have overtaken those of connectivity as the prime area of interest for top tier IoT adopters. However, just having all possible data delivered without any serious consideration of how you're using it, and capturing the associated value, is a waste.

4

Start with off-the-shelf products

The IoT solutions market used to be dominated by custom-built solutions but today productized solutions are most common. The rich array of off-the-shelf solutions tick most boxes of enterprise IoT deployments, and those offers can be the first port of call for any enterprise. IoT platform providers and other solution providers tend to have great IoT knowledge which adopters can tap into.

5

Focus on business model to get ahead of the pack

To accelerate ahead of this top tier of IoT adopters, you should focus on business models. These leaders have moved from connectivity to data but perhaps have yet to make the leap to fully evolving their business models. You should look at how to capture full value of application exhaust data, and ensure IoT is fully integrated into enterprise processes, including all control flows. That's how to truly embrace IoT.

Highlights

Enterprise IoT adoption is heading into a new phase, moving beyond highly customized solutions deployed in peripheral parts of the business. A May 2021 survey, by Oracle Communications, of 800 of the most sophisticated IoT rollouts, found that the vast majority were entrusting their most critical core systems and processes, including those that directly affect their relationship with their customers, to IoT. At the same time, they were strongly favoring off-the-shelf productized solutions over highly customized tailored projects; a change which has significant implications for likely winners in the IoT space. As part of this evident maturing, there is also a very positive trend indicating the market has moved on from considerations of how to connect devices, to issues of what to do with the data coming from them.

Key findings include:

- Deployment times average 8.5 months, compared to an industry average of about 11 months, implying that the increasing use of productized solutions was accelerating deployments.
- Almost 90% of projects were described by the respondents as “fundamental” or “very important” to their core business. Furthermore, just over half of all projects are mainly externally focused, visible to the customer. This is in marked contrast to the typically internal and non-core projects that have dominated in the past.
- Three-quarters of respondents want connectivity to be bundled in by the solution provider and 25% are happy for it to be completely opaque. That trend is even more pronounced for projects in the planning phase, implying that it will be an even more common trend in future. Of greater importance was getting access to data and analytical tools. 70% of respondents wanted providers to include such capabilities as part of the solution.
- When asked about whether they prefer procuring custom versus commercial off-the-shelf (COTS) solutions, the respondents predominantly favored COTS (64%).
- IoT platform vendors have established themselves as the go-to organizations for help with deploying IoT. When asked what type of vendor they'd go to as lead supplier, 56% of respondents chose IoT platform vendor as one of their top 3 (and 25% as the #1). Systems Integrator was next with 42% (14%). Then business software vendor with 33% (9%).

Leading-edge adopters are looking much more at using IoT to transform core business processes, are prioritizing off-the-shelf solutions and IoT platform vendors, and have shifted from considerations of connectivity to those of data.

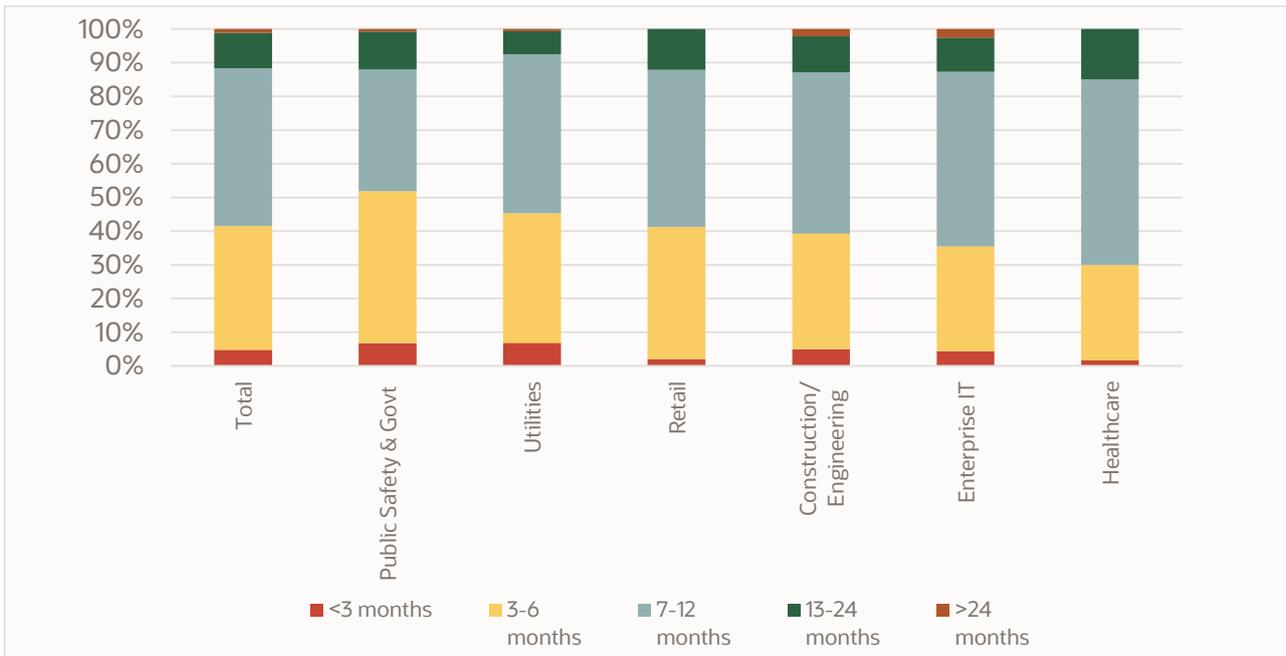
These leading adopters are looking much more at using IoT to transform core business processes, are prioritizing off-the-shelf solutions and IoT platform vendors, and have shifted from considerations of connectivity to those of data. Their attention has moved on from “low hanging fruit” to business-critical systems.

IoT is becoming quicker to deploy and more sophisticated

One of the stand-out findings from the survey was the extent to which these deployments seem to be happening more quickly and more easily. Almost 90% of the respondents' projects took, or are expected to take, less than 12 months to deploy, with an average of 8.5 months. We do not have time series data with which to compare directly, but this indicates a shortening of timescales. However, industry analyst firm Transforma Insights has been engaging in a substantial analysis of historic IoT deployments as outlined in the [Digital Transformation Implementation Best Practice Report](#) from April 2020 and analysis of those results indicates a historic average of 11 months to deploy a new IoT project. Given that the projects undertaken by our survey respondents tend to be more sophisticated than most, this further reinforces that deployment times are accelerating.

Figure 1: Time to deploy IoT projects

[Source: Oracle Communications IoT Survey, 2021]



Question: Q3. How long did it take (or do you expect it to take) to implement an IoT solution from conception to launch? [Pick one]. N=800; Construction/Engineering 140; Utilities 161; Healthcare 60; Retail 148; Public Safety and Govt 133; Enterprise IT 158

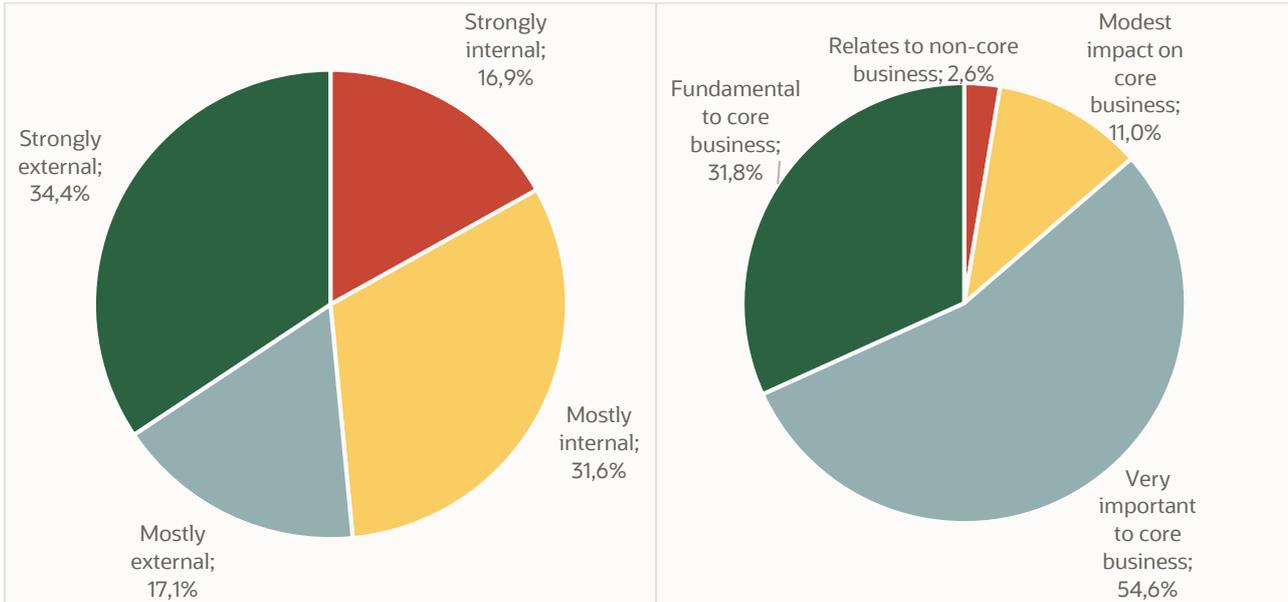
IoT deployments are also moving into the mainstream, increasingly covering core processes and external projects. Historically, a substantial majority of IoT projects have been focused on 'low hanging fruit' of internal efficiency savings, such as supply chain logistics or condition monitoring for production equipment. The survey indicates that for these top tier adopters the balance has now shifted, with projects evenly split between internal efficiency-saving projects and external client-facing projects (as shown in Figure 2). This illustrates a growing sophistication in how IoT is being used.

This is further supported by the fact that over 30% of respondents' projects were in use cases that were described as "fundamental" to their core business, and almost 90% were "fundamental" or "very important" to the core business. To some extent, the importance of this finding must be tempered by the fact that we were specifically surveying adopters of relatively sophisticated IoT deployments. Nevertheless, a figure of almost 90% being fundamental or very important to the core business is impressive.

One other thing to note is that this increasing comfort with adopting more critical IoT systems may reflect the changing attitude to overall digital transformation initiatives in the wake of COVID. New technology adoption that might have been expected to take years (if it happened at all) has in many cases been pushed through in months. This is explored in the boxed text marked 'COVID as a force for Digital Transformation.'

Figure 2: Internal vs. external projects and impact

[Source: Oracle Communications IoT Survey, 2021]



Questions: Q4. What are you aiming to accomplish with the IoT project? [Pick one]; Questions: Q5. How critical is the project to your business? [Pick one]. N=800.

There are also some strong indicators that, as well as being prepared to entrust increasingly critical systems to IoT, respondents were becoming increasingly comfortable with the business case. In the past, it was quoted by many organizations as one of the key limiting factors on deploying IoT. However, in our survey, when asked in general what solutions providers might do to help improve the experience of implementing IoT, the lowest ranking suggestion was for help with the business case (see Figure 14). The implication is that organizations are becoming increasingly comfortable with making the business case for IoT.

COVID as a force for digital transformation

The COVID pandemic has acted as a force for change for many enterprise sectors and functions, change that might otherwise have taken decades. The first and most obvious impact of the pandemic is that a lot of work that has historically been undertaken in a workplace, can in fact, be undertaken just as well (if not better) by employees working from home. In March 2020, Avatour (somewhat presciently) launched a remote quality assurance solution supported by Augmented Reality (AR) technology¹. Another example saw Henkel deploy PTC's Vuforia Chalk collaborative AR product to ensure good communications between support and development staff and employees in production locations².

Another longer-term impact will relate to manufacturing, which will become increasingly automated so the profile of the manufacturing cost base changes: the proportion of costs associated with machinery increases, while the proportion associated with labor falls. And as the labor proportion of costs falls, it makes less sense to locate manufacturing plants in cheap-labor locations and more sense to locate such facilities nearer to end consumers. 2020 may prove to be the point where the direction of travel in global manufacturing changed from being increasingly global to increasingly near-shoring, with much more significant demand for factory automation.

There is also a range of use cases deployed specifically to help combat the pandemic, but which will likely have longer-term transformational impact. This includes IoT-enabled healthcare delivery drones, delivering tests, PPE, and medicines. Elsewhere, there has been increasing demand for building management and footfall monitoring devices such as that from Sundray and Deutsche Telekom, initially for the purposes of managing the risk of transmission, but which will ultimately continue to be used for other non-COVID purposes in future.

This rapid shift has created challenges and opportunities. Companies must be ready to act on new market opportunities, be ready for internal change, and keep a close watch on new technology developments and trends. Lots of new technologies have been adopted to cope with COVID, but they need to see long term adoption and integration into business practices for it to be a digital transformation rather than just a contingency plan.

¹ <https://avatour.co/virtual-inspection-software>

² <https://www.ptc.com/en/blogs/corporate/henkel-uses-vuforia-chalk-real-time-remote-assistance-covid-19>

Considerations of connectivity give way to data

Much of the discussion around IoT in the past centered on connectivity, that is how to connect the “thing.” While it remains a critical part of any IoT proposition, among our survey respondents it is clear that connectivity should no longer demand the focused attention by IoT adopters that it once garnered. More important are considerations of how best to get, manage, and analyze the data coming from the IoT devices.

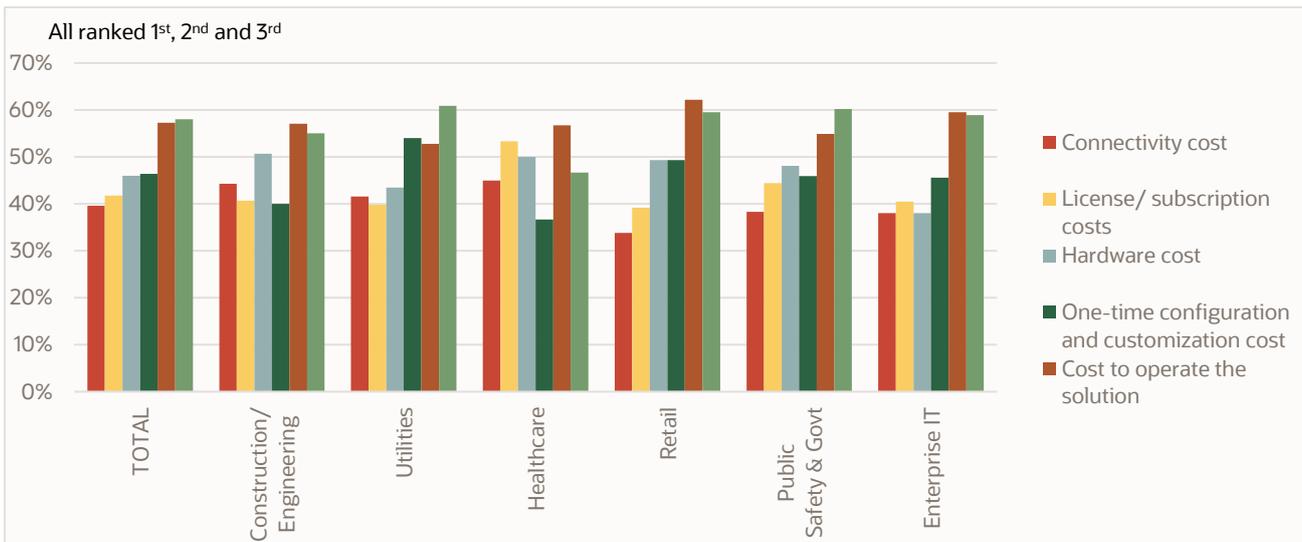
Connectivity should no longer demand the focused attention by IoT adopters that it once garnered. More important are considerations of how best to get, manage, and analyze the data coming from the IoT devices.

The first indicator toward this view on connectivity is the fact that it is ranked as the least important factor when it comes to how respondents might want to control costs. When asked to name the top three costs that they are trying to manage, survey respondents rated connectivity as lowest priority overall, as illustrated in Figure 3. Contrast this with findings in Figure 4 where significantly more respondents would have pursued control of connectivity to control tariffs, and thus cost.

Of course, in some deployments there is no requirement for connectivity over and above whatever private network might already be implemented (e.g., in-store WiFi for retail). However, even in verticals that gravitate much more towards distributed applications, such as construction and utilities, connectivity costs are still relatively low down the priority list. Cost of connectivity is not a big pain point warranting active mitigation.

Figure 3: Ranking of costs to be managed in IoT projects

[Source: Oracle Communications IoT Survey, 2021]



Question: Q6. What are the top costs you are trying to manage in this project? [Rank up to 3 in order]. N=800; Construction/Engineering 140; Utilities 161; Healthcare 60; Retail 148; Public Safety and Govt 133; Enterprise IT 158

Therefore, it is neither something that users particularly want or need to purchase separately. They are happy to entrust the provision of connectivity to their solution provider, indicating that connectivity is more of a base service not needing their direct attention.

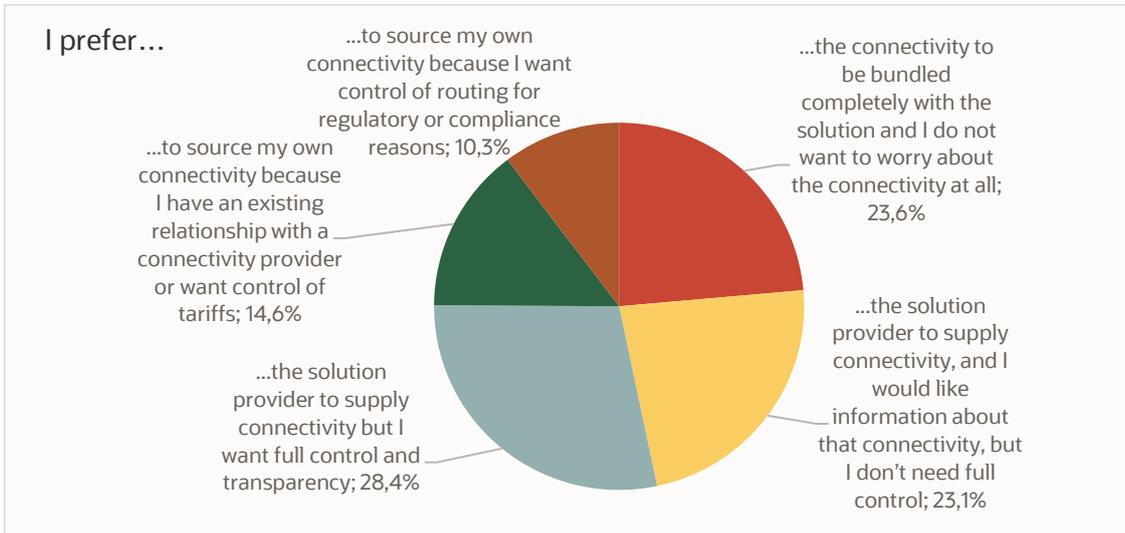
Three-quarters of survey respondents want connectivity to be provided by the solution provider and 25% were happy for it to be completely bundled in the solution, to the extent of not even needing to know who was providing it, as also illustrated in Figure 4.

[Enterprises] ... are happy to entrust the provision of connectivity to their solution provider, indicating that connectivity is more of a base service not needing their direct attention.

The trend is even more pronounced when the respondents were asked about newer projects. For those that are only in the planning phase the equivalent figure is that 80% of respondents want connectivity to be provided by the solution provider, and 35% want it bundled as an opaque part of the solution. This neatly illustrates that the direction of travel is towards more connectivity integrated into solutions.

Figure 4: Sourcing of connectivity in IoT projects

[Source: Oracle Communications IoT Survey, 2021]

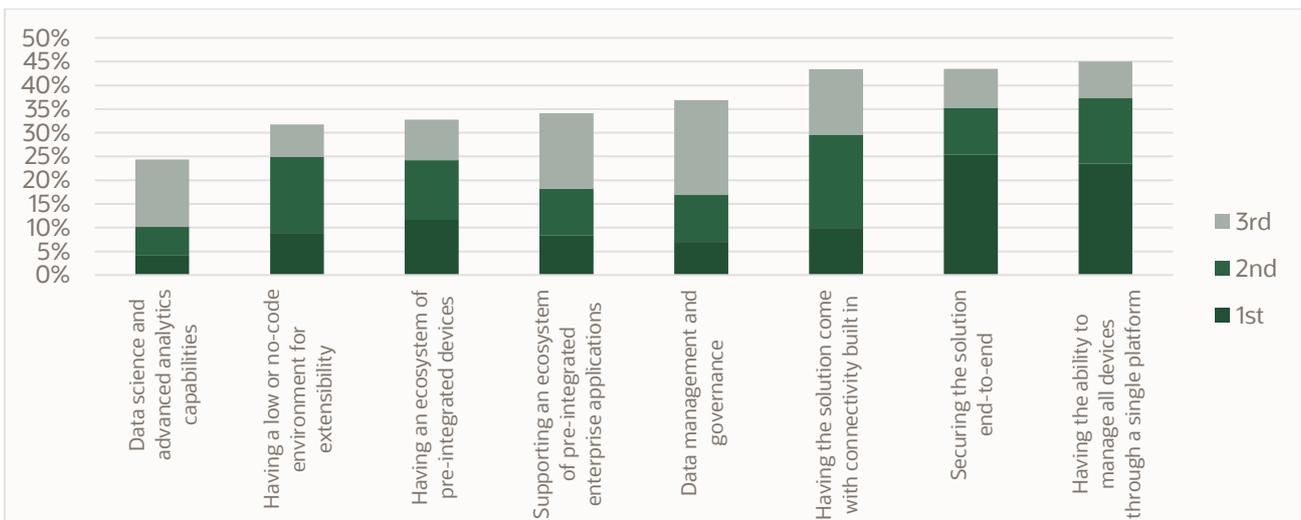


Questions: Q 7: When purchasing an IoT solution for the enterprise application, is it important to purchase connectivity (e.g., cellular plans) separately or do you expect/want it to be included? I prefer... N=800

Further emphasizing the preference for connectivity to be bundled in with the solution, another survey question asked about which of eight capabilities of IoT solutions needed the most attention. The requirement to have the solution come with connectivity “built in” was equally the second most popular choice, with 43% of respondents picking it as one of their top three improvements, as illustrated in Figure 5.

Figure 5: What capabilities are most needed in IoT?

[Source: Oracle Communications IoT Survey, 2021]



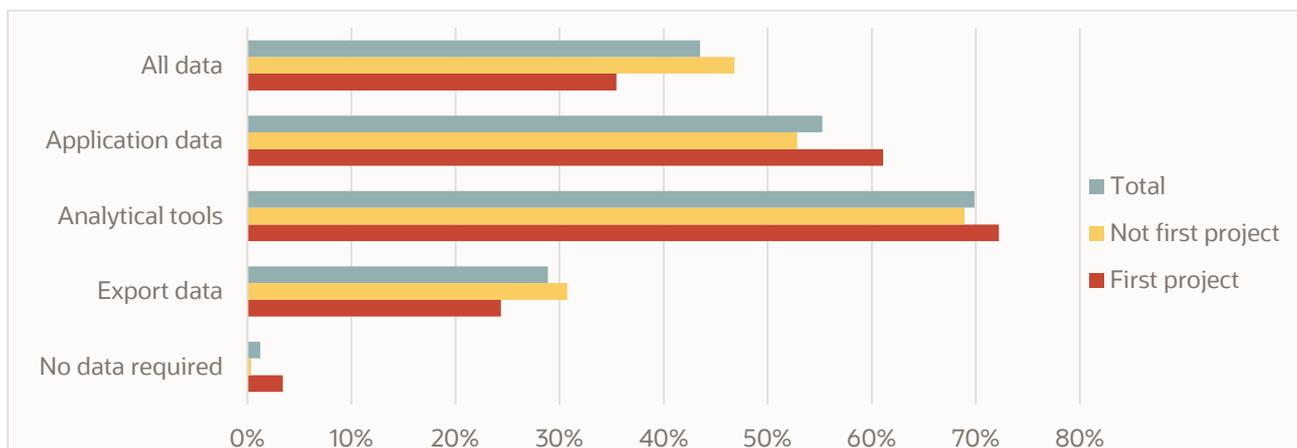
Question: Q20. Based on your experience of planning or deploying IoT, what are the capabilities needing the most attention from solution providers to improve their solutions? [Rank 3 in order]. N=800

In contrast to this evolved view of connectivity, the subject of “data” is attracting significantly more dedicated and focused attention. IoT deployers are getting serious about data and the tools to manipulate it. Asked about how

important it was to get access to the data from the IoT devices, only 1% of respondents said they did not need access to the data; the response of “I don’t care as long as the application works” was roundly rejected by our respondents. As shown in Figure 6, 55% of respondents wanted access just to application data, while 45% wanted all data related to the IoT deployment, that is including connectivity, device status, and so forth. There is also a great interest in tools for making sense of the IoT data. Overall, 70% of respondents wanted analytical tools to be able to get most value from the data, whereas 30% were content simply to receive the data.

Figure 6: Requirements to access data

[Source: Oracle Communications IoT Survey, 2021]



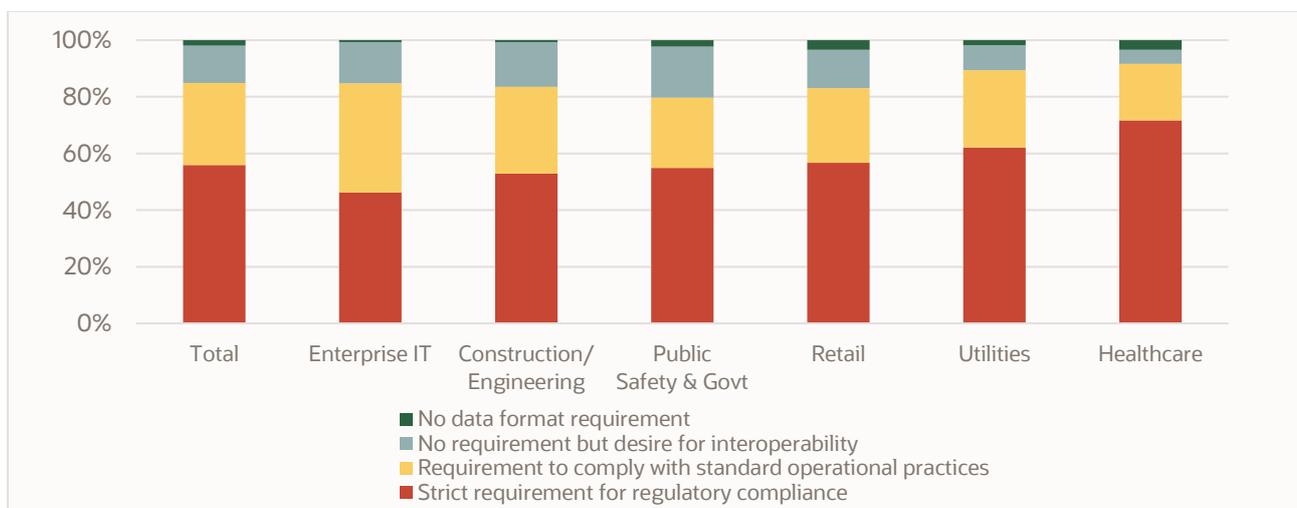
Question: Q8. For this project how important is it to you to have access to the IoT data to perform additional analysis beyond what the enterprise application needs? [Choose one]. N=800; First project 234; Not first project 566

This substantial interest in data to an extent reflects an increasingly complex landscape for IoT data. 85% of respondents said that their projects have some requirement (either regulatory or based on a desire to comply with standard operational practices) for compliance with standard data formats.

Figure 7 illustrates the requirements, showing variation by type of deployment. Unsurprisingly the sectors with the greatest compliance requirements are healthcare and utilities, both of which typically have strict rules about how data can be managed. Among these sophisticated IoT deployments, being able to manage data in an appropriate way is a significant consideration.

Figure 7: Data modeling and delivery requirements

[Source: Oracle Communications IoT Survey, 2021]

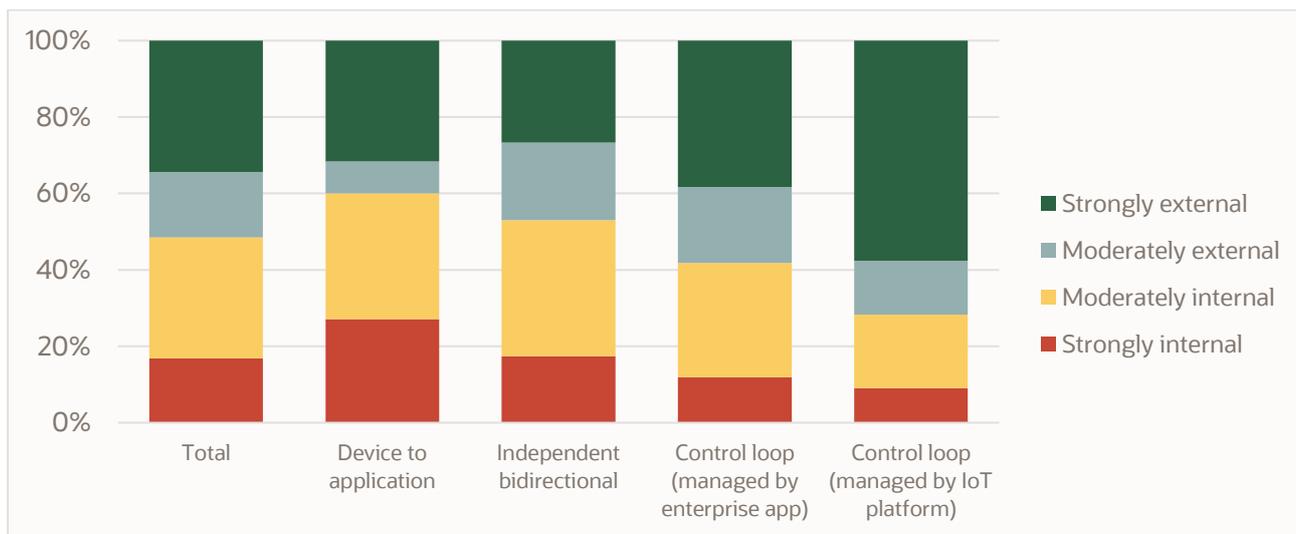


Question: Q9. For this specific project is there a requirement in your industry for data to be modeled and delivered in a particular format for interoperability and exchange outside of your systems? There is... N=800; Construction/Engineering 140; Utilities 161; Healthcare 60; Retail 148; Public Safety and Govt 133; Enterprise IT 158

Responses to another question indicate that there is a diminishing amount of IoT which is based on simple data gathering. Survey respondents said that over 80% of their projects involve bidirectional data flows, rather than simple data gathering from device to application. The survey further asked about the complexity of those IoT solutions provisioned as bidirectional. In some cases, these would simply be for sending/receiving messages, which is bidirectional, but with those functions effectively independent of each other (43%). In others, it would involve some level of control loop, either managed by the enterprise application (25%) or by an IoT platform (12%). As illustrated in Figure 8, the more sophisticated applications (such as those focused on client experience with products and services) have a much greater requirement for a control loop managed by the IoT application. This is perhaps intuitive given that those are both elements of the complexity of the application.

Figure 8: Data transmission direction in IoT

[Source: Oracle Communications IoT Survey, 2021]



Question: Q14. Which of the following best characterizes your IoT implementation or IoT plan? [Pick one]. N=800; Device to application 155; Bidirectional 345; Control loop (managed by enterprise app) 201; Control loop (managed by IoT platform) 99

It is also interesting to note that the importance of data does seem to have its limits, and it still needs to mature further. Firstly, the extent to which bidirectional data flows are independent of each other, rather than being based on a control loop, indicates room for further evolution. Furthermore, when asked about the features that they intended to include in a project (as shown in Figure 9), the lowest score was for digital twins. Listening to the IoT community as a whole one would expect digital twins to feature quite significantly in the consideration of companies deploying, but seemingly there continues to be a gap between the industry buzzwords and the reality of on-the-ground deployment. Some functionality is still yet to be properly understood or included in planning.

We are moving from a world where discussions around IoT have shifted from “how do I connect this thing?” to “what can I do with all this data that I am gathering?” This is a very positive shift, reflecting a move away from a supply-led, if-you-build-it-they-will-come mentality where the focus was on connecting things without necessarily having a firm view on why, or what would be done with the data. This reflects a wider trend in IoT that sees connectivity moving to a subsidiary role in a decision-making process.

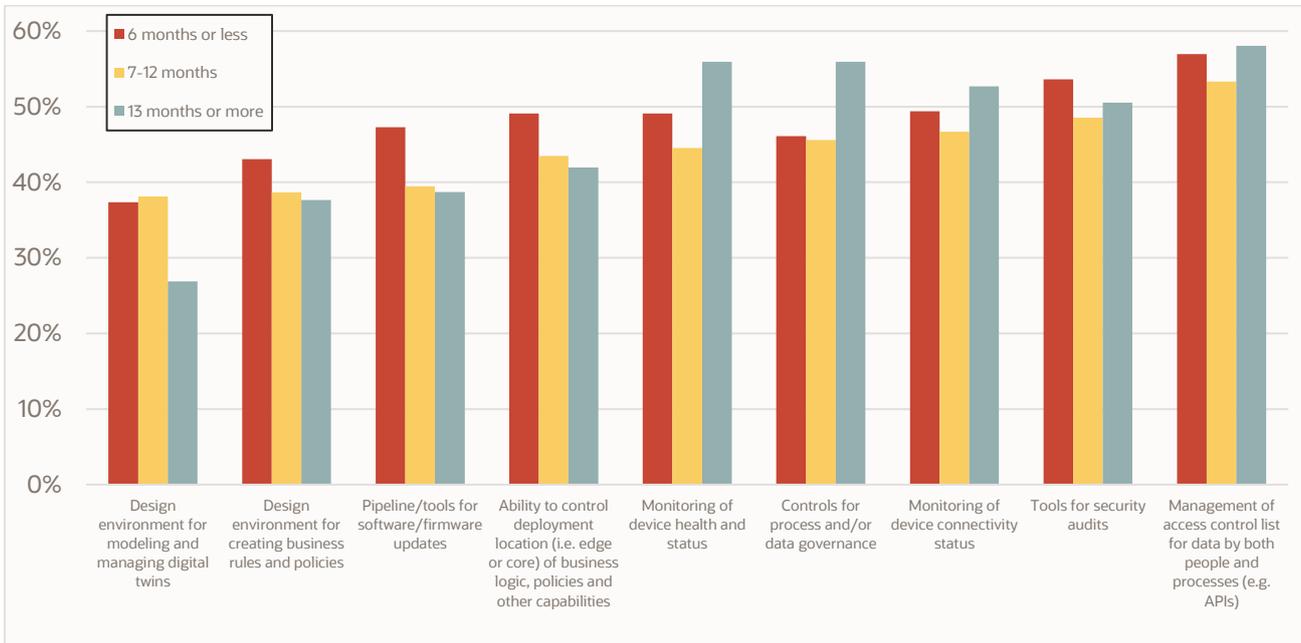
We are moving from a world where discussions around IoT have shifted from “how do I connect this thing?” to “what can I do with all this data that I am gathering.”

Ultimately, we expect connectivity to become increasingly integrated within an IoT solution offering, to the point where it will become a feature, or may be entirely subsumed into the solution. This is not to belittle the importance of connectivity. It is critical. But it is increasingly well understood, and its issues have been largely resolved.

The focus has now shifted to the data. Figure 9 offers further insight into where the next step might be: it is interesting that “Design environment for creating business rules and policies” is languishing towards the bottom of the list. This indicates a further area into which IoT can expand as it continues to mature.

Figure 9: Features in IoT projects

[Source: Oracle Communications IoT Survey, 2021]



Questions: Q11. Please select all of the following which you have (or plan to have) in your IoT project; Q3. How long did it take (or do you expect it to take) to implement an IoT solution from conception to launch? [Pick one]. N=800; 6 months or less 332; 7-12 months 375; 13 month or more 93

Connectivity as a feature

It is very possible that within three to five years the majority of IoT connectivity will be procured indirectly as part of a broader offering, whether that be hardware, cloud hosting, or end-to-end solution. The connectivity provider may end up being less of a focus to the user, who will merely be interested in paying for the set of services it requires, which will include remote message and data delivery to/from its IoT device.

The idea of paying per-MB for data has been the mainstay of IoT WAN connectivity since the start. It has, however, become largely obsolete. Increasingly we expect charging (particularly for low bandwidth applications, which comprises the majority of devices) to be predicated on paying by a more meaningful metric, be it per API call, or per device hosted. Paying per MB is applicable only for the small minority of use cases where there are large volumes of data, such as connected cars or CCTV. Perhaps behind the scenes the mobile network operator still gets paid per MB, but that’s not how the end users will pay.

The market is already evolving towards selling messages, as illustrated by the Eseye offering on AWS Marketplace where one million messages costs USD50¹. Sierra Wireless has a similar arrangement, charging USD1/month and USD1/1,000 messages². We also see this in the arrangements for NB-IoT roaming which is more based on connecting a device (with traffic within agreed parameters) than carrying data.

Ultimately, connectivity becomes a feature, rather than a product.

¹ <https://aws.amazon.com/marketplace/pp/prodview-buukbpkgua6sw>

² <https://www.sierrawireless.com/octave/pricing/>

Time for off-the-shelf solutions to shine

One of the most striking trends from the survey is the preference for off-the-shelf solutions rather than custom deployments tailored to the specific needs of the enterprise. This manifests itself in a number of ways.

Firstly, when asked specifically about whether they prefer procuring custom versus commercial off-the-shelf (COTS) solutions, the respondents predominantly (64%) favored COTS. When asked about how they might prefer to source their COTS solutions, most (79%) said they preferred to use multiple vendors, rather than a single provider. To a certain extent, this reflects a general macro-level trend in the provision of IoT, moving towards more productized solutions and away from custom development, whether in hardware or the availability of dedicated IoT middleware platforms.

Secondly, when asked about who they typically will go to (if anyone) when developing an IoT strategy, it was “trusted vendor” that ranked the highest, ahead of systems integrators, consultants, and in-house development. Interestingly, while the response of “in-house” ranks in third position overall, it ranks fourth for those organizations that have deployed projects in the past and are changing their approach. This indicates that a significant number of organizations are learning from experience that trying to do everything in-house is not the optimum approach.

Figure 10: Ranking of vendors to assist with developing an IoT strategy

[Source: Oracle Communications IoT Survey, 2021]

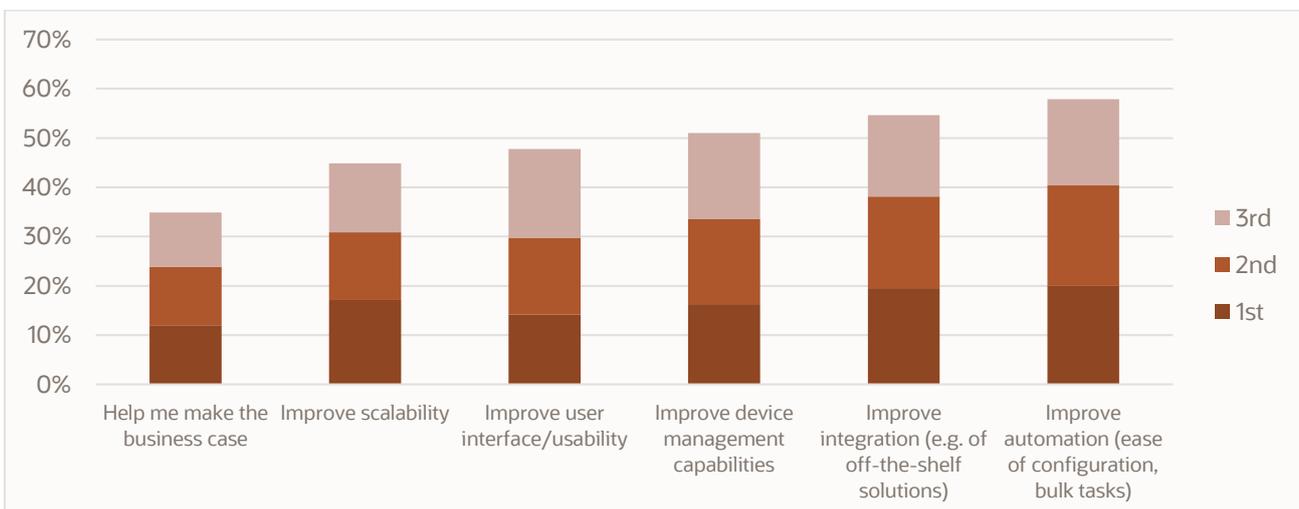
	TOTAL	FIRST PROJECT IOT	NOT FIRST IOT PROJECT BUT MAINTAINING SAME APPROACH	NOT FIRST IOT PROJECT AND CHANGING APPROACH
Trusted vendor	2.0	1.9	2.0	2.0
Systems integrator	2.2	2.3	2.2	2.1
In-house	2.6	2.5	2.5	2.8
Consultant	2.8	2.8	2.8	2.6

Question: Q17. Which of the following vendors do you typically use for DEVELOPING AN IOT STRATEGY? [Rank 3 in order]. N=800; Australia (100), France and Switzerland (100), Germany (125), Mexico (100), Spain (75), UK (100), US (200).

Finally, when asked about the ways in which solutions providers can improve the user experience, the top two most quoted reasons (as illustrated in Figure 11) are through improving integration of off-the-shelf solutions and improving automation. Both of these indicate a desire for more productized solutions that do not require heavy lifting to integrate.

Figure 11: Ways for solution providers to most improve the experience

[Source: Oracle Communications IoT Survey, 2021]

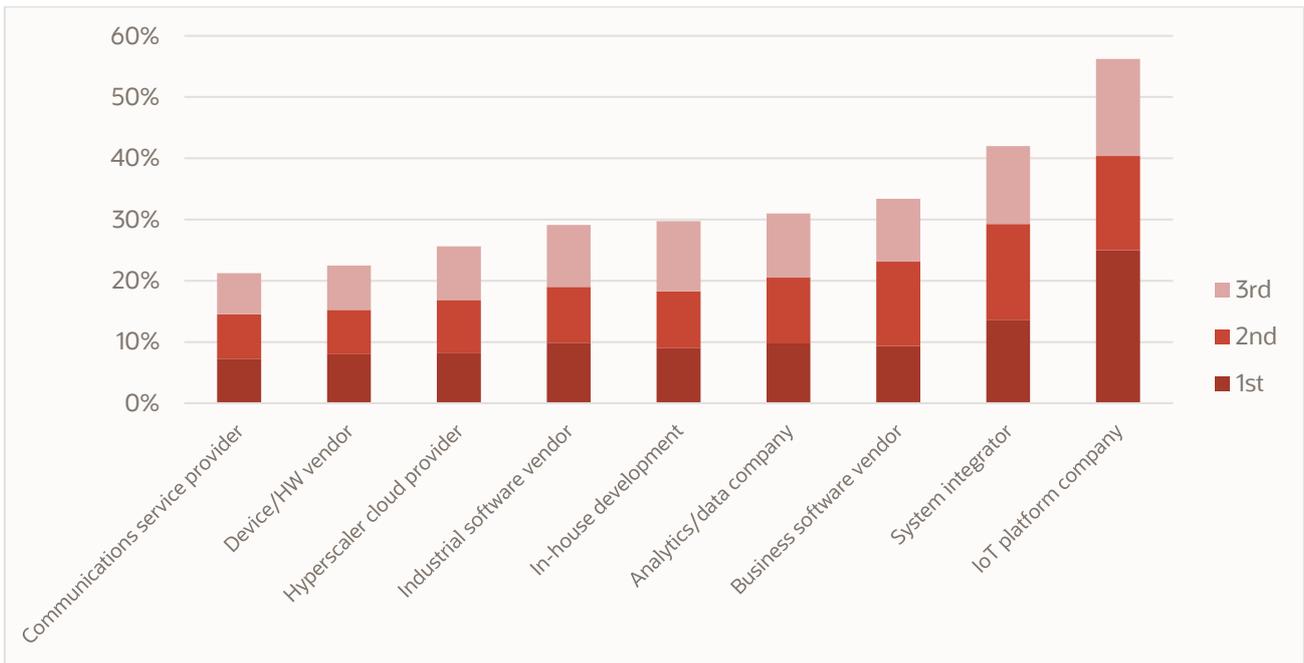


Question: Q21. Based on your experience of planning or deploying IoT, what are the ways in which solution providers could most improve the experience?? [Rank 3 in order]. N=800

The importance of the trusted vendor is also mirrored in the response to a question about which type of company the respondent would typically choose as lead supplier (see Figure 12). By a large margin, the favored response is IoT platform company. The wider market consensus historically has been that systems integrators are usually the lead providers in the market, particularly for the most sophisticated IoT deployments. However, among the respondents of our survey, IoT platform vendors have established themselves as the go-to organizations for IoT. 56% of respondents chose that category as one of their top three (and 25% as the #1). Systems integrator was next with 42% (14%). Then business software vendor with 33% (9%).

Figure 12: Choice of organization as lead IoT supplier

[Source: Oracle Communications IoT Survey, 2021]



Question: Q18: What type of organization would you generally go to as the lead supplier when considering deploying an IoT project? N=800

IoT platform vendors are establishing themselves as the go-to organizations for IoT. This reflects the increasing productization and “platformization” of the space. Increasingly, adopters are demanding solutions that require minimal customization, and vendors are obliging by providing richer portfolios of productized offerings.

For organizations deploying their first IoT project, the figures are even (slightly) more pronounced, with 59% choosing IoT platform companies in their top three, and 27% choosing that option as their number one choice.

IoT platform vendors are establishing themselves as the go-to organizations for IoT. This reflects the increasing productization and “platformization” of the space. Increasingly, adopters are demanding solutions that require minimal customization, and vendors are obliging by providing richer portfolios of productized offerings. This shift from customization to productization is causing some challenges for systems integrators, which make their money out of the customization (see boxed text “Productization vs. Customization”).

This shift to off-the-shelf also reflects a recognition that IoT products organizations, particularly platform companies, tend to have a lot of highly valuable and often vertically specific knowledge over and above simply providing a platform.

The platformization of the market is further illustrated by a significant desire to avoid stove-piped, single standalone application deployments, in favor of running applications on platforms. When asked about their objective for deploying IoT overall, only 26% said they favored deploying standalone applications. The largest number of respondents (46%) favored deployments based on a single IoT platform.

To further emphasize the trend, when asked about which features they would most like to see given additional attention by solutions providers, more respondents included having the ability to manage all devices through a single platform in their top three than any other choice. As shown in Figure 5, above, it scored overall higher even than end-to-end security, although the latter did score higher in terms of first priority.

However, there is still the need for customization of the product. IoT is still too diverse for a single off-the-shelf solution to realistically address every possible user. It may cover the most common use cases and sets of requirements, but some element of customization will always be required.

Productization vs. Customization

One of the main prevailing trends in the supply of IoT and wider digital transformation is the increasing richness of off-the-shelf products with the knock-on effect that there is less requirement for customization. There has been a trend over the last two decades for more platform-based capabilities to supplant IoT capabilities being built from scratch. Various constituent functions such as connectivity, application development, and device management have been greatly simplified as a result. Increasingly, this is extending into the solution space. There have always been off-the-shelf solutions available, but their increasing richness and functionality means that demand for customization has proportionately declined.

A recent report from industry analyst Transforma Insights, 'Systems Integrators should take on a new role to respond to increasingly productized competitors' (April 2021)¹, looked in some detail at the impact this productization was having on systems integrators, which depend on the need to customize solutions for clients. The report examined how vendors such as AWS, Microsoft, Oracle, and SAP are developing richer, more vertically tailored, and more flexible product sets that eat into systems integrators' revenue opportunities for solution development and deployment.

Ultimately, this is a positive step for the acceleration of IoT. The solutions available for the enterprise are quicker and easier to deploy, reducing the barriers to adoption. The direction chosen by the market leaders, as targeted in this survey, is illustrative of how the market will likely evolve in future.

The market is still unsettled

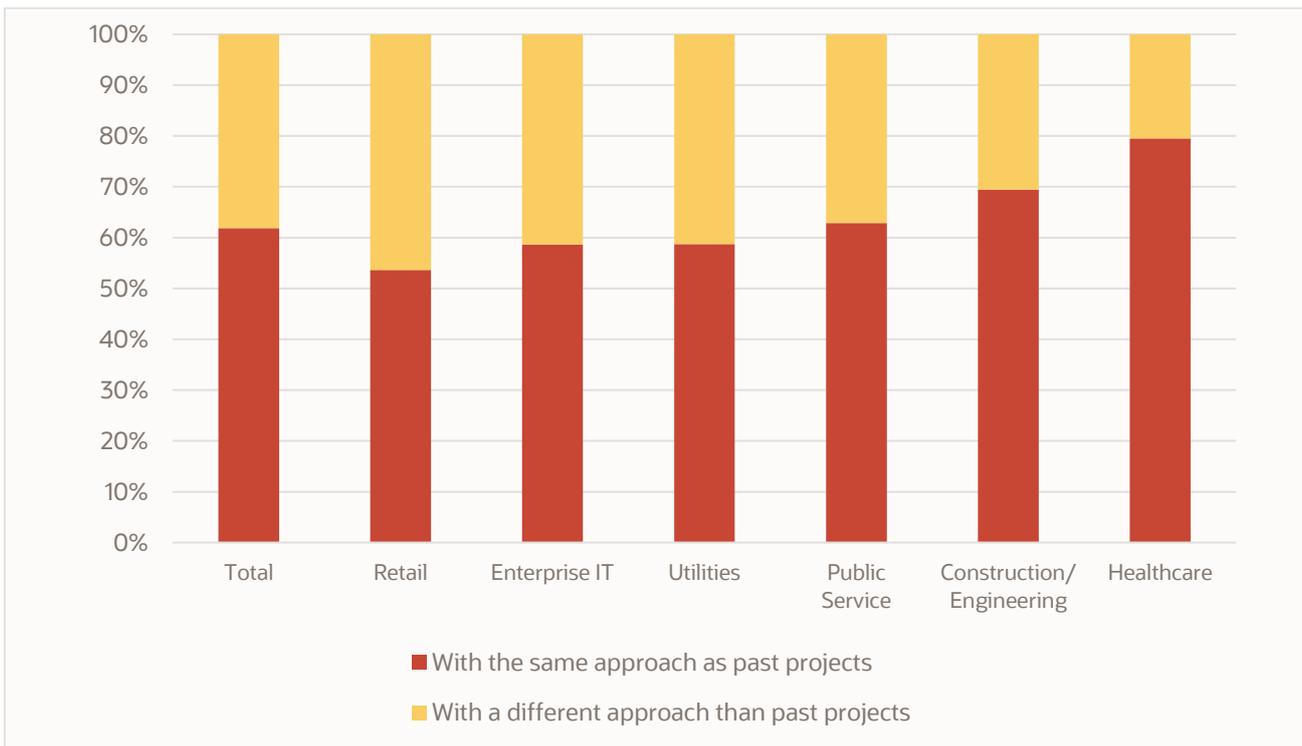
The findings reported up to now might indicate a market that is reaching maturity, but that is still a long way off. Almost 30% of the enterprises covered by the survey were engaging in, or had just deployed, their first IoT project. The survey was limited to organizations that had some experience of deploying IoT, so we do not have figures for the proportion of organizations that have adopted overall. However, the fact that a large segment of the respondent base was engaged in project number one illustrates a market opportunity that is still wide open.

Of those that have deployed, almost 40% are changing (or had changed) their approach for their latest project...demonstrating that terms of engagement for IoT projects were still very flexible. There is no established status quo.

Of those that have deployed, almost 40% are changing (or had changed) their approach for their latest project, as illustrated in Figure 13, demonstrating that terms of engagement for IoT projects were still very flexible. There is no established status quo. This desire for a different approach was highest among retail-related deployments and lowest for healthcare, reflecting the stricter regulatory bounds within which healthcare typically must work and the resulting lack of room for maneuver in adopting new approaches.

Figure 13: Approach to new IoT projects

[Source: Oracle Communications IoT Survey, 2021]

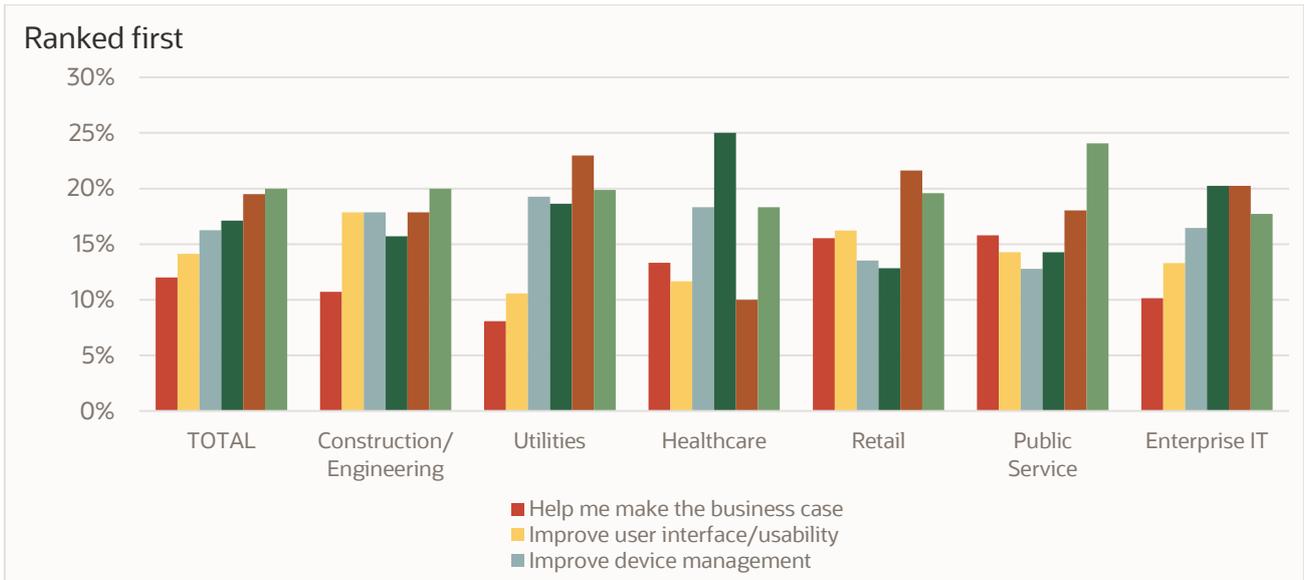


Question: Q2. How are you approaching (or have you approached) this project technically, compared to past IoT projects? For instance, components, integration and/or vendors. Excluding respondents that are deploying their first IoT project. N=800; Construction/Engineering 140; Utilities 161; Healthcare 60; Retail 148; Public Safety and Govt 133; Enterprise IT 158

Looking at ways in which adopters feel that vendors could make life easier for them provides some further insights into how things might still be yet to evolve. The top ranked reasons relate to simplifying the functional process of getting the project up and running, specifically automation and integration (as illustrated in Figure 14). While IoT adoption for our respondents might be increasingly sophisticated, including ever more mission-critical projects and systems as discussed in previous sections, there are still improvements that can be made.

Figure 14: How IoT solution providers could improve the experience

[Source: Oracle Communications IoT Survey, 2021]



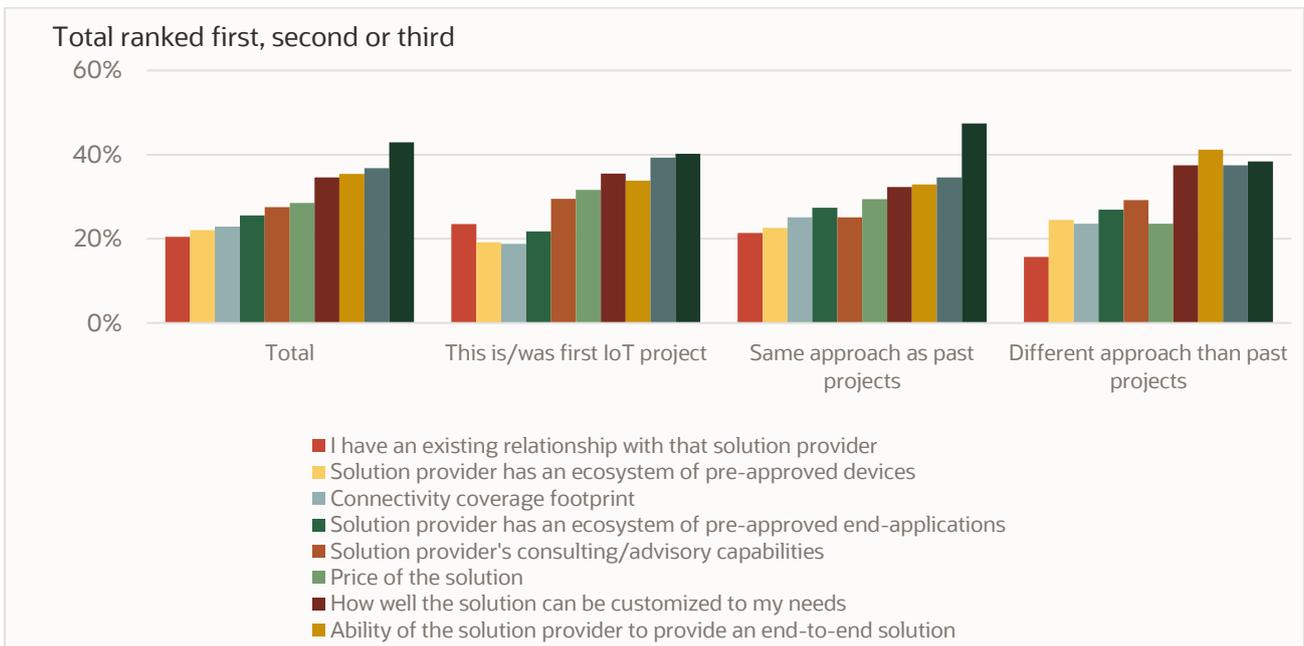
Question: Q21. Based on your experience of planning or deploying IoT, what are the ways in which solution providers could most improve the experience? N=800; Construction/Engineering 140; Utilities 161; Healthcare 60; Retail 148; Public Safety and Govt 133; Enterprise IT 158

Another indication of how the market is not yet settled is the degree to which adopters are very open-minded about their choice of vendors. The vendor landscape continues to evolve in IoT, with new platforms, hardware manufacturers, connectivity providers, and solution providers emerging all the time. The good news for them is that adopters are generally very happy to entertain the possibility of engaging with new partners. When asked about their criteria for selecting a particular solution provider, the lowest ranked selection criteria was whether the user had an existing relationship with the vendor. The highest ranked criteria was level of security, followed by reputation of the solution provider in IoT.

Any vendor that is able to establish credibility in the market, coupled with a high guarantee of security of the solution, will be an appealing prospect for any IoT adopter, regardless of whether they have worked with them before, or not.

Figure 15: Vendor selection criteria

[Source: Oracle Communications IoT Survey, 2021]



Question: Q19. What are the top factors that would influence you to select a particular IoT solution provider? [Rank 3 in order]. N=800; Is/Was First Project 234; Same Approach as Past Projects 350; Different Approach Than Past Projects 216.

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