



A blueprint for copper decommissioning

[Digital and Analytics](#) / Article

July 20, 2023

Significant benefits can accrue to telecom companies that pair their fiber expansions with copper retirements. Here's how to do it.

There's a question that often occurs to telecommunications executives when they enter one of their urban wire centers. "Why haven't we retired some of these copper switches and removed cables?" If they ask the question of a colleague on the commercial side, they get a shake of the head and a suggestion that maybe the VP of networks has the answer. If they ask the VP of networks, they hear that there are still pockets of copper customers that the commercial team doesn't want to lose.

It is, in part, the different focuses of telecom functions that makes copper decommissioning such an intractable problem. But there are other problems too, and they collectively explain why a transition that seems like it should be straightforward is anything but.

This article presents the key questions—and answers—that carriers need to grapple with as they start to treat decommissioning as more of a priority.

What happens in copper decommissioning and why are companies looking to do it?

Copper decommissioning is what happens when telecommunications companies shut off and dispose of parts of their copper-based infrastructure. It is usually accompanied by an attempt to migrate customers to alternative communications products.

The interest in copper decommissioning projects has coincided with the expansion of fiber services, upgraded cable DOCSIS networks, and the availability of fixed wireless. These newer networks have led to a decline in legacy copper customers and in the utilization of copper networks, increasing the costs to serve the residual client base. The high salvage value of copper assets has further increased the attractiveness of copper decommissioning.

Are there carriers that have had success with copper decommissioning?

Pretty much all carriers have started to do some work in the area. Two that have talked publicly about their efforts are AT&T and Verizon. AT&T has said that it hopes to [cut its copper footprint in half by 2025](#). Verizon last year said it had [upgraded 4.5 million circuits on its network from copper to fiber and converted 36 of its central office locations to all fiber](#). The conversion of those 36 central office locations, the company said, had resulted in [operational savings of around \\$180 million](#).

It's clear, however, that there have not been a lot of highly successful widescale copper decommissioning programs. Success has been particularly elusive in the United States, because of regulatory constraints and the challenges of serving dispersed customer populations across large geographic areas.

What are the financial arguments for copper decommissioning?

There are some significant ones. The first is the benefit that copper decommissioning can provide in the way of **reduced operating expenses**. Maintenance of copper networks has gotten more costly because of rising power costs, unavailability of key parts, the overall age of the networks themselves, and an increasing scarcity of trained copper technicians.

Second, getting rid of unutilized or barely utilized copper cables can have a **cash benefit**. According to our analysis, a single 9,000 foot, 2400 pair count F1 cable can yield \$100–\$150K in net salvage value after planning, network engineering, and extraction costs. Downsizing the copper footprint also frees up significant space at wire centers which can be monetized via sublease or colocation agreements. In some cases, operators have successfully moved their active fiber equipment to the basement or parking lot of their original wire center, freeing up remaining assets for potential sale or lease.

Third, copper decommissioning can contribute to **a higher stock market valuation**. An operation based on modern fiber technology is what investors want to see. Copper shutdowns are a signal of this; they imbue confidence in investors. Analysis of publicly traded telecom operators shows that operators perceived as pure plays in fiber have twice the valuation multiples as mixed copper and fiber operators.

A fourth financial benefit is **improved customer economics**. Fiber customers generally have a higher contribution margin than copper customers, owing to the lower cost to operate fiber (which requires less power and less maintenance). Through copper decommissioning and fiber migrations, carriers can improve the lifetime value associated with customers.

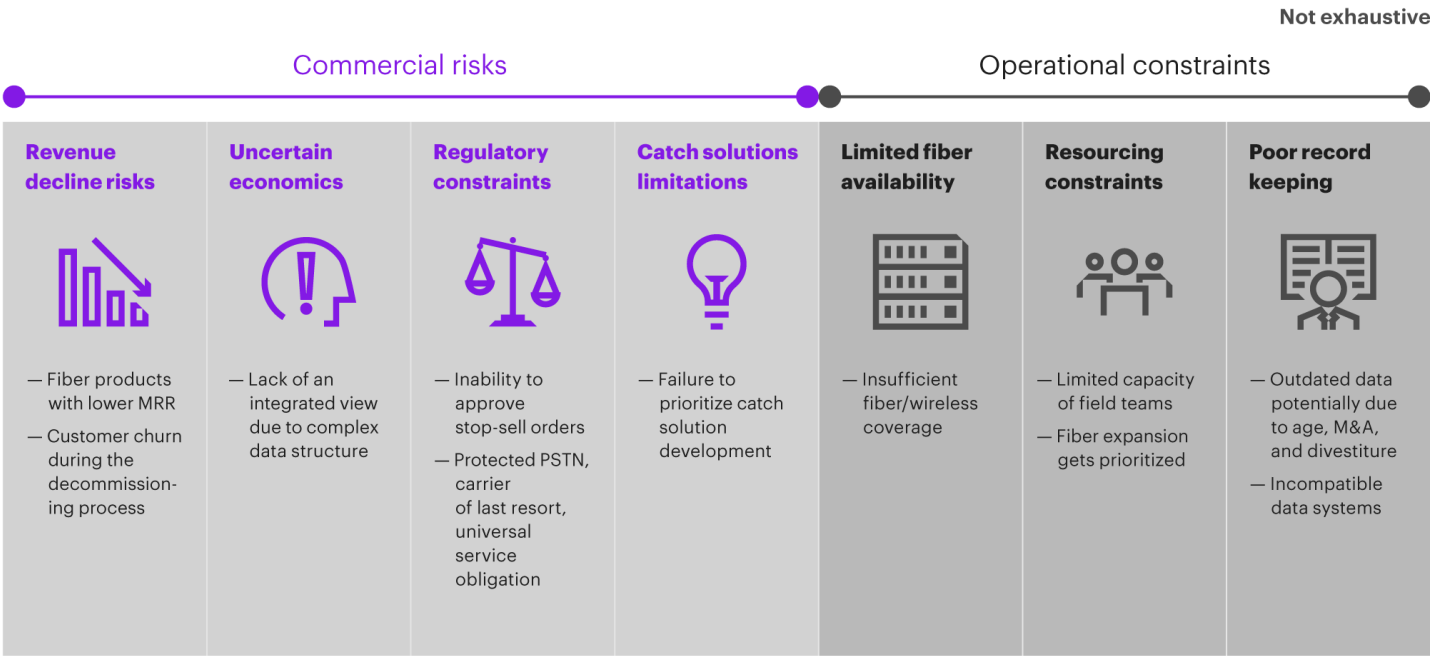
Are there nonfinancial benefits too?

A reduced environmental impact is probably the biggest such benefit. In a comparable distribution area, fiber service can consume as much as 70 percent less power per subscriber than legacy copper service. So there’s a chance of a material reduction in a carrier’s greenhouse gas emissions, lowering the telecom companies’ scope 2 emissions. Additionally, decommissioned copper cables can be recycled or repurposed to offset the need to mine new resources, supporting circularity imperatives.

What are the most common challenges in decommissioning copper?

There are both commercial and operational issues to work through (see figure 1). On the commercial side, the fiber products that most telecom companies are moving to are subject to more price competition than comparable copper products, negatively affecting the top line. Decommissioning efforts can also drive an increase in customer churn because of the “*You mean I’m still paying for this?*” factor—which happens when a communication from a provider alerts a customer to something they’re not using but have on autopay. There’s also the challenge of pinpointing the payoff from decommissioning. The data and inputs must be pulled from different departments and then cleansed and compiled—no easy task.

Figure 1
There are a number of cross-functional challenges faced by carriers in copper decommissioning



Notes: MRR is monthly recurring revenue. PSTN is public switched telephone network.
Source: Kearney analysis

The “stop-sell” of copper services in areas where decommissioning is planned is a necessary part of the copper wind down. However, a stop-sell order could have negative commercial implications—adding to churn—if commercial teams don’t have viable “catch solutions” to keep former copper customers from defecting to competitors. Additionally, the stop-sell decision must be managed in concert with complex regulatory requirements to continue serving specific areas (for example, carrier of last resort, universal service obligation), to avoid risk of fines or penalties imposed by local or national authorities.

Operational challenges include insufficient fiber reach to execute the switch and field resources constraints. Field teams have a lot of daily responsibilities (including last-mile builds) and in many cases it's just easier to assign them to revenue-generating fiber expansion initiatives than to copper decommissioning projects whose economics are less certain. Challenges with recordkeeping are especially common when infrastructure is old or when a telecom company has gone through mergers, acquisitions, or divestitures and does not have a proper mechanism to consolidate information.

What can telecom operators do to make their copper decommissioning efforts more successful?

Our work supporting carriers globally with their copper decommissioning efforts has helped us identify a number of best practices that can mitigate the challenges.

Integrate decommissioning into the broader network plan. Copper decommissioning should be incorporated into the fiber network buildout. The marginal cost of expanding fiber to include copper customers during initial construction is far lower than the cost of reaching such customers after the fiber is in place. With careful planning, there's a chance of turning many of the stranded copper customers into fiber subscribers.

Decommission in chunks. Decommissioning isn't an all-or-nothing proposition. Some of the clients we've worked with have realized immediate savings through targeted rightsizing of active copper equipment at wire centers and through the retirement of unutilized or barely utilized copper cables. In the case of some clients, the copper cable has had salvage value. Costs to decommission still need to be factored in but the economics of such near-term rightsizing can be quite attractive.

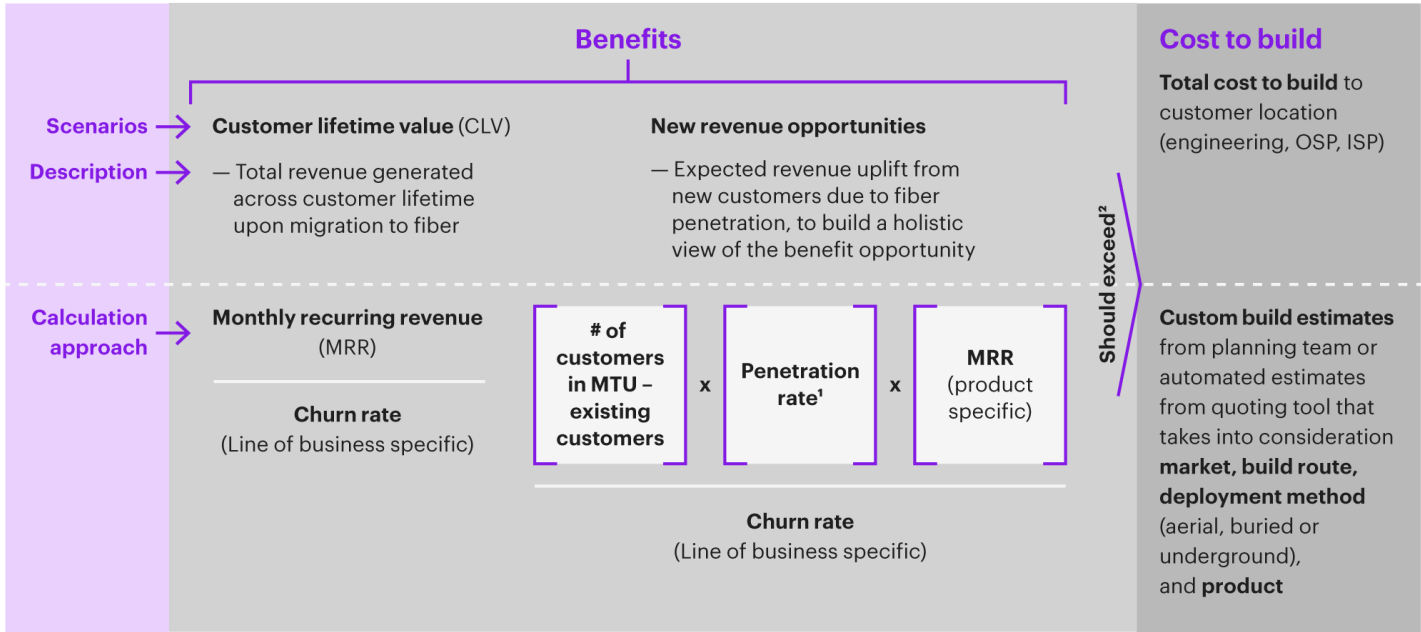
Develop comprehensive data and analytics about copper networks and customers. To make the right decisions about what to do in a copper decommissioning program, carriers need a single source of truth for key areas, such as cable inventory and customer subscriptions. Establishing a central data lake, cleaning up obsolete data, strengthening data management and governance processes to join cross-functional datasets, and creating new analytics and decision support capabilities are ways that carriers can gain more transparency into copper program economics.

Know the regulations that protect copper networks. Decommissioning teams should work closely with their legal and commercial departments to make sure the stop-sell of copper services doesn't violate the carrier's regulatory obligations. Ideally, stop-sell should be implemented for a whole region. Where regulations make that impossible, address-level stop-sell may be possible with the right IT setup and if the sales force receives training on alternative fiber products.

Extend the fiber network to reach stranded copper customers if the ROI is positive. In markets where the initial fiber build is already complete, there may be some copper customers who are not "on-net"—that is, not reached by the fiber. These customers don't necessarily have to be forever lost when the copper services are cut off. If the copper customers are "near net"—within a specified distance of a main fiber cable—it may be worth the incremental cost of running fiber cables to those premises. The business case for near-net extensions should consider the potential revenue upside from cross-selling to other

customers at the target locations (for example, multi-tenant locations). Figure 2 shows how the benefits and costs for such a program could be calculated.

Figure 2
A holistic approach may be used to assess whether benefits exceed cost



¹ For example, 20–30% for brownfield vs. 70–80% for greenfield sites

² Potentially need to consider hurdle rate.

Notes: MTU is multi-tenant unit. OSP is outside plant. ISP is inside plant.

Source: Kearney analysis

Develop a comprehensive set of catch solutions. The lack of appropriate catch solutions for copper services increases the likelihood of customer churn and affects the economics and timeline of many copper decommissioning efforts. Clear from-to migration pathways must be established for existing customers, and catch products must be in place or nearing completion before the decommissioning begins. In cases where a fiber-based catch solution is not economically feasible, alternative options such as fixed wireless and POTS in a box should be considered.

In addition to the existing copper service, catch solutions should consider customer characteristics such as segment, size, industry, and current product uses. For example, a larger enterprise voice customer with complex routing rules may be hesitant to migrate their service due to the risk of business disruption. In such a situation, copper emulation over fiber may be the best way of protecting the revenue.

Identify third parties that can help with field work if internal resources are tied up. Field teams are stretched thin, and if a decision must be made about laying fiber cables or pulling out copper ones, the fiber work—with its ties to future revenue—usually wins out. In these situations, a carrier that wants to move forward with copper decommissioning might consider using third parties for some of the field work. The carriers’ scale should be helpful in negotiating favorable terms with the third parties.

Make a priority of enterprise customers and wholesale partners during the transition. Large enterprise customers can be hesitant to go through decommissioning due to potential operational impact and regulatory complexities, especially in industries such as government and healthcare. When it comes to wholesale partners, carriers’ inability to directly contact end customers adds challenges. By engaging

enterprise and wholesale customers early and co-developing the decommissioning road map (financials, timelines, responsibilities), carriers can increase the odds of a seamless migration and minimize unwanted churn. It may help to assign dedicated account managers to assist priority customers at each stage of the decommissioning process.

For a carrier that wants to get serious about copper decommissioning, where should they begin?

We typically advise carriers to do a full analysis of the copper situation in each of their wire centers. The questions this analysis seeks to answer are how many copper customers their wire centers collectively support, at what cost, and with what infrastructure. The goal is to get a comprehensive view of the copper footprint.

The first baseline is of each customer's demographics, line of business (for example, wholesale, residential, enterprise), size, product details, and fiber enablement. This baseline creates a picture of each customer's strategic importance and migration potential, and informs the decommissioning options (whether to migrate to a readily available fiber product, build and migrate, emulate copper over fiber, or simply disconnect the customer).

The second area that gets a baseline analysis is the operating costs (opex) associated with the copper-based services. Electric power, labor, and network maintenance (including for vehicles and spare parts) comprise the bulk of the expense. Along with the customer baseline, the opex analysis highlights the equipment decommission potential and opex savings based on customer migrations (for example, turning down unused equipment can save power and reduce maintenance tickets).

Finally, the cable baseline contains information on each cable's location, dimensions, physical linkages, activity level, and type (for example, aerial or underground). The cable baseline shows the utilization of each cable and provides an estimate of the salvage potential from decommissioning efforts. (Figure 3 summarizes the different kinds of baselining.)

Figure 3

There are several types of baselining

Key questions

Customers

- What copper services are customers buying?
- What is the from-to mapping for each copper product?
- Where are copper customers located?
- Are services migratable (in other words, is fiber capability and a catch solution available)?

Opex

- What are the operating expenses related to copper networks?

Cables

- What are the characteristics of each cable?
- What is the linkage between cable segments?
- How many customers are on each cable?
- What is the salvage value of each cable?

Notes: LoB is line of business.
MRR is monthly recurring revenue.

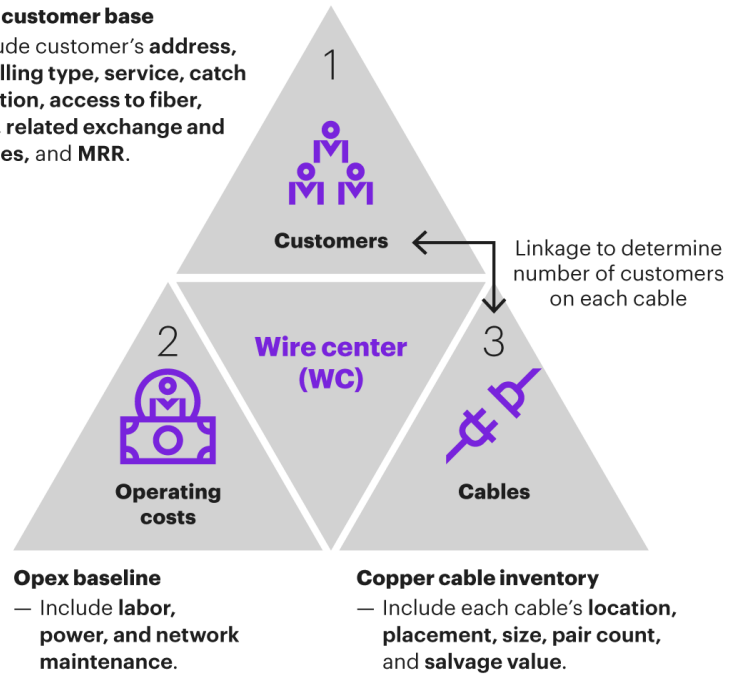
Source: Kearney analysis



Baseline components

Active customer base

- Include customer's **address, dwelling type, service, catch solution, access to fiber, LoB, related exchange and cables, and MRR.**



In what way is it valuable to have this view of the wire centers?

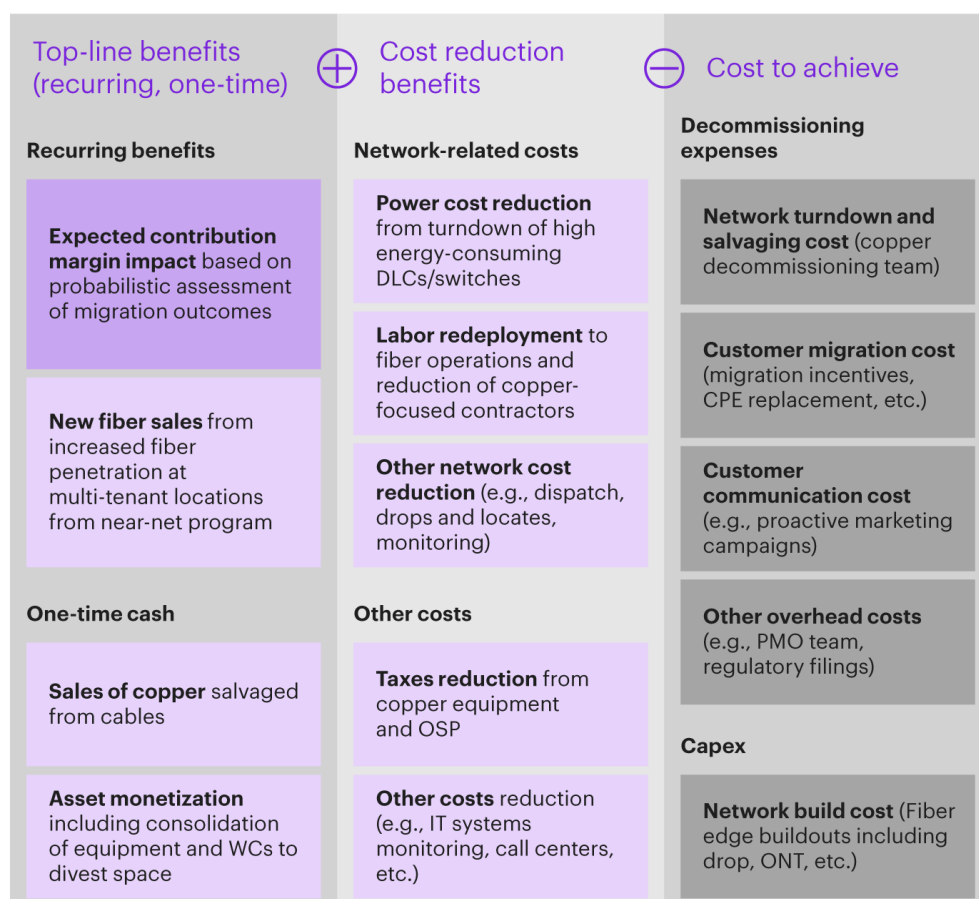
The baseline view is the foundation on which a carrier can start to quantify the value of its copper decommissioning opportunities. That quantification goes into an economic model which uses top-line benefits, cost-reduction benefits, and program costs as inputs (see figure 4).

Figure 4
A copper decommissioning benefits assessment model helps quantify the value of decommissioning opportunities

- Positive impact
- Negative impact
- Uncertain impact

Notes: DLC is digital loop carrier. OSP is outside plant. CPE is customer premises equipment. PMO is project management office. ONT is optical network terminal.

Source: Kearney analysis



Top-line benefits. One of the first things to do is assign probabilities to the migration outcomes, which break down as shown in figure 5. Those assessments—and their associated revenue implications—become part of the aggregated economic model.

Figure 5
It is important to assign probabilities to the various migration outcomes

Migration scenario	Estimated revenue changes
Failed migration (customer churn)	Revenue becomes zero
Migration – write-down	Revenue decreases
Migration – upsell	Revenue increases
Migration – convert-as-is	Revenue stays the same

Source: Kearney analysis

New fiber sales benefits are estimated based on expected penetration of buildings brought onto the fiber network as part of the decommissioning effort (near-net opportunities), as well as the typical contribution margin for these customers. These, too, represent a recurring benefit.

Finally, there are one-time cash benefits in the form of the net salvage value of copper cables and asset monetization. These benefits are closely tied to the scale of migrations.

Cost reduction benefits. By disconnecting unused equipment at the wire center and remote locations, a carrier may be able to generate significant power savings. It can contain its labor costs by reducing the network maintenance tickets associated with the legacy network and customers. (Typically, fiber services require much less maintenance.) Property taxes may also come down as the copper network is retired, though in the United States, the benefit will vary by location (because of the different ways that US states determine property taxes).

Decommissioning costs. Turning off the copper network and extracting the cables comprises the bulk of decommissioning expenses. There are also costs linked to building the customer communication plan, launching it, and physically installing new equipment for customers that are migrating. And there are the costs of a project management office, which is needed to oversee a decommissioning program.

These are one-time costs or costs of fixed duration, versus the more permanent cost-reduction benefits. The projected net present value and internal rate of return will inform go/no-go decisions as the various decommissioning opportunities come up for consideration.

What can a carrier do if it is not ready for a full-scale decommissioning program but wants to test the waters?

Carriers can identify micro-geographies where the financial upside is clear and where execution is likely to be relatively easy. An easier geography would be one in which there is a high percentage of fiber enablement, few regulatory barriers, and some capacity among the field teams.

Of course, commercial teams would have to be heavily involved, figuring out the who, what, and when of migrating customers. Residential customers in the selected geographies may need field visits to help them understand the implications of no longer having their old copper-based services—and of moving to fiber. The extra push provided by incentives (such as free bandwidth upgrades and one-time gift cards) might also be helpful with the residential customer segment. As for enterprise customers and wholesale partners, they need to be involved early in the process to be sure their special concerns are understood and addressed.

Conclusion

Although copper cabling has clearly faded as a telecom industry building block, it is not going away completely. There's just too much of it connecting too many communications systems and serving too many customers. The halting effort that most carriers have made to date to decommission their copper networks is not surprising; fiber is where the future is. But copper decommissioning is going to keep coming up as an enabler of telecom's next phase. For those that figure out how to do it, they will get the reward of reduced operational costs, new growth capital, and more profitable services.

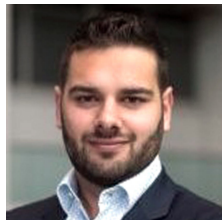
The authors would like to thank Ryan Fielder and Johnson Ooi for their valuable contributions to this article.

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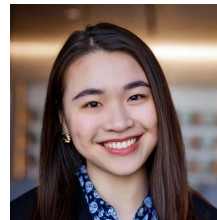
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