



[www.pipelinepub.com](http://www.pipelinepub.com)

Volume 17, Issue 2

## Technology Manifest Destiny

By: [Mark Cummings, Ph.D.](#)

To manage their destiny, CSPs need to become intelligent consumers of infrastructure software. As telcos and other communications service providers move into software-centric networks, they face a key decision. Some are focused on buying all their key software from one or two large vendors. Others are choosing to focus on developing their own key software internally. Both of these approaches are fraught with danger, including the concerns of innovation, differentiation, reskilling, and cost control. As shown in Figure 1 below, the smartest path lies in the middle on the spectrum of choices between these two extremes. This middle path is best described as becoming an intelligent consumer.



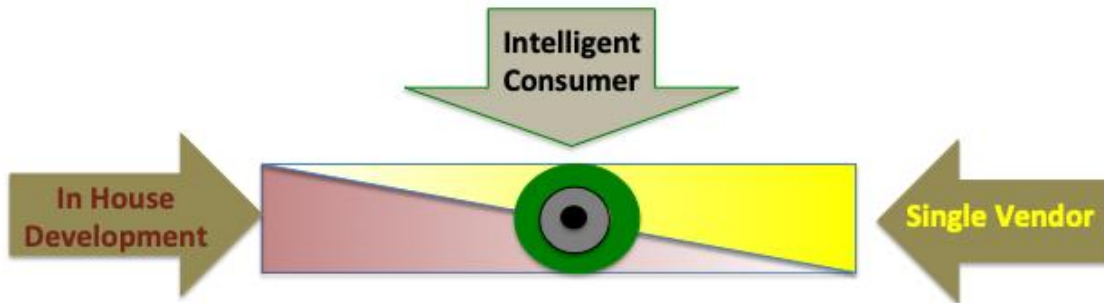
### Software as destiny

In a softwarized network, a CSP is essentially the sum of its infrastructure software. Innovative, high-quality, easy-to-maintain software makes for a thriving telco. Missing out on any one of these risks becoming moribund.

### Single vendor extreme

Let's go through a scenario to illustrate this concept. Telco A is going through a management change and has revised its strategic plan. One area that its plan addressed is infrastructure software technology sourcing. Leadership has decided to partner with one very large software vendor. Theoretically, this allows Telco A to remain technically current while taking advantage of economies of scale, thus lowering costs. Further cost containment would come from avoiding a

major reskilling effort and even reducing headcount. This also simplifies work for the procurement department.



**Figure 1: Finding the middle between internal development and single vendor procurement**

The Telco A approach reminds me of a situation at Visa some decades ago. Once a year, the IBM sales rep for Visa would bring a binder to the head of technology. It had the complete systems plan for the next year: every product necessary, including hardware, software, service, documentation, training and so forth. The head of technology would take the binder as his budget to his CEO. Visa's only product primarily existed in its computer system. The strength of the connection between IBM and Visa's destiny became clear when the CEO retired and the IBM sales rep took his place.

The situation between Telco A and its supplier may not be as extreme, but the Visa case is illustrative. When a company is captive to one supplier, the company may gain benefits but faces the risks consistent with buying from a monopoly, including higher prices, lower quality, and loss of the ability to innovate. This loss means ending up with the lowest common denominator functionality, which leads to loss of differentiation of Telco A's services from its competitors.

When a company loses its ability to innovate, it imperils its ability to thrive. This is because today's competitive landscape includes the rapid expansion of the super scalars like Google, AWS, Azure, and so on into traditional telco services. This pressure is further amplified by the appearance of cost-effective low-earth orbiting satellites (LEOs) and the push for 5G networks owned and operated by enterprises.

Telco A's approach does minimize the need for reskilling and culture change. But it pays a very high price for this benefit.

## **The in-house development extreme**

From this perspective, the decision of Telco B to build its own internal software development group based on open source may seem like a way to avoid the monopoly risks that Telco A faces. But Telco B faces another set of daunting challenges. Theoretically, internal development allows

Telco B to be the master of its destiny. The company can determine its unique requirements and build exactly what best serves its unique needs. However, Telco B's approach faces a number of challenges, including reskilling, innovation, technical risk, execution risk and cost control.

Telcos may have built up software development expertise in their business IT departments. But networking software is fundamentally different from business IT software. Network operations staff understand the needs of the network but typically don't have the required advanced software development skills. Regardless of which part of the telco takes the lead, a major reskilling effort to attract the right type of software talent is needed. This is going to be difficult and expensive. To recruit talent, the telco is competing with innovation-driven startups, super scalers, enterprises and other digital-first players. Relying on open source groups dedicated to telco software may seem to moderate some of the reskilling as well as technical and execution risks. But the telco open source efforts have proven to face serious limits. First, sophisticated observers have commented on the fact that the telco industry is a small fraction of the size of the general enterprise market. Yet, even the large general enterprise open source groups haven't sought to develop the kind of complete operations solutions that the telco groups are focused on. In effect, the telco open source groups appear to be dominated by the few large vendors seeking to hold on to monopoly-like control, while attacking a problem with challenging scale, complexity, and volatility aspects. Consider that all this must be pursued with fewer resources than the enterprise-focused efforts that the telco open source efforts are modeled after. What is the result? It's definitely not innovative or efficient software.

In addition to the apparent limitations of the current open source groups, Telco B faces the normal technical and execution risks that any software development effort must face. The jury is still out on how much of the promise Telco B will be able to achieve. But some observers have noted that Telco B has been working on this for approximately four years and has not yet put much into operation.

Finally, by focusing on a single technical approach, Telco B has lost the potential advantage of a portfolio approach. The telco faces challenges in marshaling sufficient quality resources to develop one approach. A portfolio of different approaches is beyond its reach. If leadership picks what turns out to be the best approach, all is good. If not...to be fair, Telco A's approach faces similar portfolio risks.

## Telco as intelligent consumer

A telco acting as an intelligent consumer recognizes that to maximize its success, it must develop an ecosystem of suppliers. This doesn't mean that all telcos must have the same set of suppliers. Each needs to select candidate suppliers based on its own particular situation, influenced by geography, competitive objectives, legacy infrastructure, and so on. The term *candidate suppliers* is a careful choice. To be effective, the ecosystem must maintain competition at some level. One way to do this is to select suppliers based on overlapping characteristics. For example, a supplier may be chosen to deliver X while having the capability to deliver Y. Another supplier may be chosen to deliver Y while also being able to deliver X.

There also needs to be a mix of types of suppliers as well as a process for vetting innovation. There also needs to be funding for collaborative innovation efforts. There must be a portfolio of

these efforts, as this approach dramatically lowers risk while maintaining economic viability. Finally, there must be a clear path to implementation for successful approaches. Without this clear path, quality vendors won't join the ecosystem. Such innovation in software comes primarily from start-ups and small companies. These start-ups may be paired with large vendors to add confidence in ongoing support, yet care must be taken to avoid bait and switch, smothering, or financial arrangements that put small companies at a disadvantage. For more detail on how to assemble a portfolio that generates a stream of innovation, please see the recent article [Building an Innovation Ecosystem](#).

In transitioning to an intelligent consumer, a telco will have to do some reskilling. This is within reach. Existing advanced technology groups are experienced in technology self-retraining. Focusing them on developing their skillsets in software architecture, processes, tools, and so on is within their capability sets. Operations staff have often felt left out of key technical decisions. If approached properly, they will happily join procurement teams following the intelligent consumer approach.

Telco IT staff are already chomping at the bit. The challenge here will be to help them understand that they cannot control the intelligent consumption process but rather must participate as a team member. Telcos have seen declining profits. If they understand how intelligent consumption can change their cost structures while providing for innovative new revenue sources, they will also be happy to join the teams.

Procurement will not need significant reskilling but will face significant culture change. Current procurement practices make things relatively easy for procurement. Moving to intelligent consumption will mean more and new kinds of work for procurement. In order to get their support, procurement teams need to understand that their role must change to ensure the company thrives. In other words, taking on a harder job will open the path to a new, more key role for procurement.

In some ways, transitioning to an intelligent consumer represents a culture change for telcos. To effectively make such a change requires senior management vision and support. Recognition of this culture change is [gaining traction](#) among industry leaders.

## Intelligent consumer benefits

The intelligent consumer approach gives telcos a way to capture the innovation stream that is necessary to be a vital and profitable business in the highly competitive landscape of softwarized networking. It also provides a way to turn competition within the ecosystem into an advantage to control costs and preserve quality—without assuming the costs and disruption of significant investments in technology and reskilling. Realizing this transition will require the vision and support of senior management. It will be well worth the effort.