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The New World of UX in Network Management

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If we were to analyze network management, and its related tools and user experience (UX), transportation provides an interesting analogy, especially concerning 'how you drive' when likened to network management options and experiences. Console or command line interfaces might be laughable when compared to a horse, but the 'hands-on' nature of the comparison works. As we evolve from left-to-right, from that of a carriage, automobile, self-driving, and then a drone, flying car or similar, the corollary to network management follows as the UX becomes less dependent on manual human interaction.



Here's the point. The broader strategic objective for network management is getting humans off the keyboard and away from interfacing with disparate NMS/EMS tools as well as working from a uniform control and automation framework that is autonomous and data-driven. Another variable of inclusion is that of user interfaces and experiences (UI/UX) that are then used by humans to program this autonomous driving experience as well as define how exceptions are handled (the automation fall-out when a human must act – flat tire, broken windshield, network element card to replace... you get the point).

This reflects how status and incidents are visualized, how outcome logic is defined (think workflow) and how data and notifications are received. This reflects the role of AI/ML within this construct to not only baseline and learn a network and its expected performance, but also the

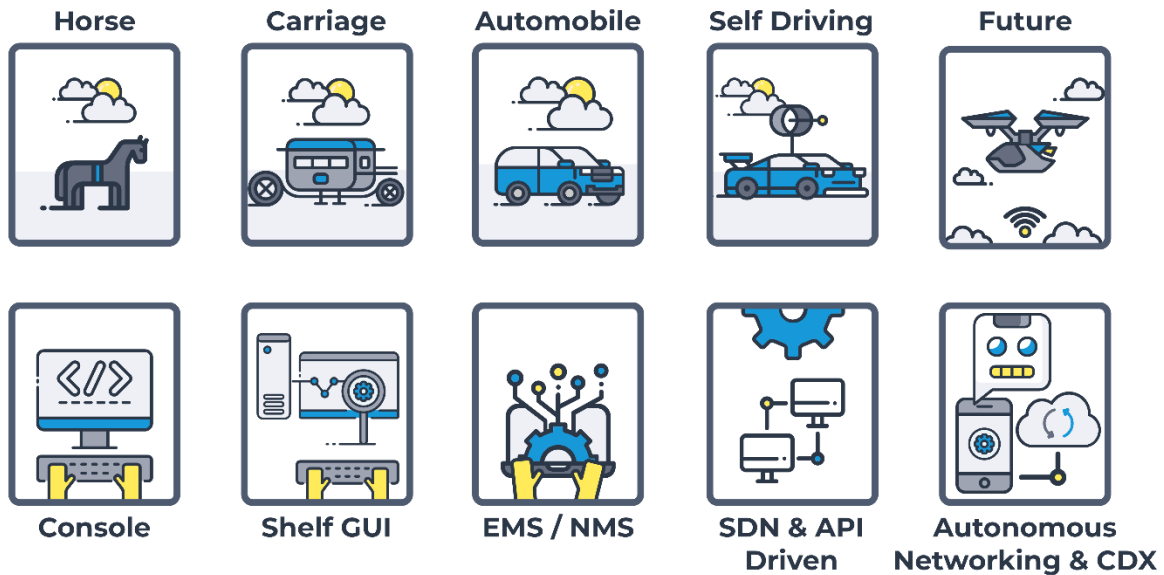


Figure 1: The horse-and-carriage analogy for transportation and network management [click to enlarge](#)

broader definitions and business rules logic around how exceptions are handled. This if/then/else programmability, such as automated triage and remediation of a network as just one example, comes into play. Additionally, it becomes essential to extend all this functionality across multi-vendor and multi-technology to include [‘open and disaggregated networks.’](#)

A reality check

If we take an honest look at how we’re ‘driving’ networks today, we probably need to admit that it is still humans accessing the network via disparate EMS/NMS tools, or in many cases directly (command line). This is especially true within service providers and their transport network infrastructure. The irony here is that the nature of these networks themselves is progressing quickly toward more open, disaggregated solutions with more standardized command-and-control interfaces (SBI) that enable a more centralized control architecture. That said, as these transport networks continue to evolve, the ‘UX to drive’ these networks still looks closer to the left side of the transportation visual above as our current reality. Some network element suppliers are at least trying to help by developing a complementary controller solution to manage their respective platform, but ultimately, these still end up looking like disparate EMS environments requiring the human to have specific training and continued swivel-chair operational behavior.

Further, if we focus on a better UX for only next-gen technologies and developing more comprehensive solutions for those we can classify as ‘greenfield,’ what happens to the networks and associated customer services that are already in place? We don’t like to bring up legacy ‘brownfield’ these days when we talk about digital transformation, but this infrastructure reflects

90 percent of the revenue and Day 2 customer touchpoints. We are not suggesting that an autonomous networking experience be enabled for legacy SONET infrastructure as an example (self-driving for the carriage?), but at least extend a uniform UX for visibility and control across these otherwise dated network assets.

How did we get here? Through networking tools and control solutions that were ‘built by engineers, for the engineers.’

So, as a restatement of the mission at hand... our ‘strategic evolution’ must also consider the complexities of open and disaggregated greenfield, generations of brownfield that already exist, and a transformation of the associated UX not just for those that currently operate and maintain these networks, but also that of ‘new users’ that can now be enabled to ‘drive’ (when the self-driving or flying option becomes a reality for a new generation of drivers that would have never driven before).

Our journey

As we move forward and begin to look around the next corner, we’ve become increasingly aware of the limitations that have been holding us back. The current state of the industry’s network management software solutions—and how we approach the management of large-scale networks—needs to evolve along with the technology. This is critical to any user experience (UX) and customer experience (CX) conversation.

A [Customer Defined Experience® or CDX®](#), transforms this. Here’s how:

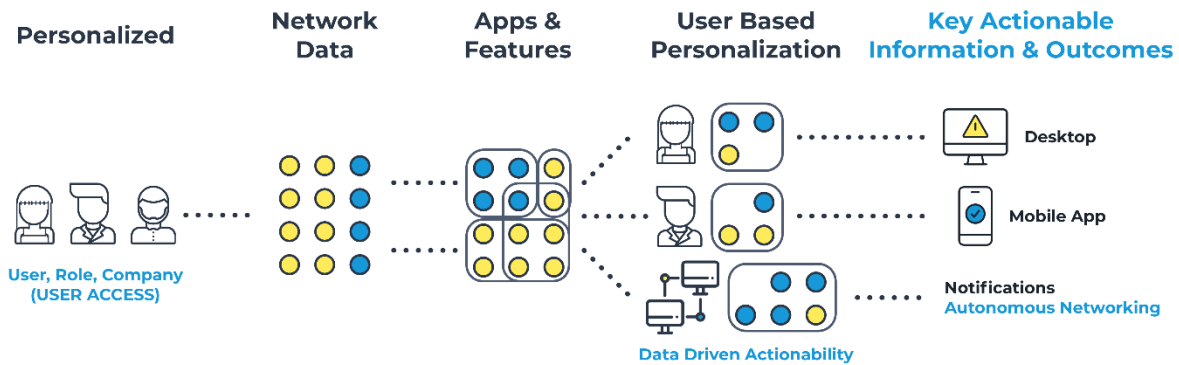


Figure 2: Personalized information
[click to enlarge](#)

Customer: The core of all good UX is to realize real people will be using these tools and every company, network and person is unique. There is no one-size-fits-all.

Defined: Every network is different, so your CX and UX solution will need to be flexible and customizable to fit the needs of your network. As mentioned earlier, both new greenfield expansion as well as legacy brownfield infrastructure need to be considered.

Experience: Just because your network is complex doesn't mean that complexity needs to be a burden on your people. Do the upfront work to leverage the right tools so that you have a good foundation on which to build for the future.

Also, focus on the user with an understanding of their role and goals. Give them a voice for what's important to them so that the experience is personalized to them. This involves a deep understanding of the objective of the user, rather than just looking at what data is available and keeping the end goal of all users in mind. Ultimately, trying to serve the needs of all serves the needs of none.

CDX® can include a new interface and an updated look and feel as most tools are certainly in need of a UI refresh every few years, but this is just the surface. When we reference CDX®, we are speaking to the whole experience, start to finish. Who is it for and is it meeting their specific needs? This entails what data is presented, and how everything is organized in apps and features, the navigation, features, priority, customization, platform, and analytics—all of which drive toward a specific use case and goal. This sometimes requires looking at why we do what we do, not just what we do or have done in the past. For example: what is the business driver for this, what is the goal, what is the measure of success, what is the impact to the customer, what is the technological impact?

The end game delivers the right information, to the right person, at the right time using whatever device they prefer to work on.

All of this should be based on their role, goals, job function and personal preferences, so that we don't have humans waiting around, searching screens and sets of data, or needing to reach out to other groups to gather information just to be able to make a good decision.

Knowledge isn't power; rather applied knowledge is power. This means we all need to use whatever tools we can such as role-based templates to make the data meaningful, understandable, and actionable. We should leverage smart dashboards that aren't just blank canvases, but instead are research-informed templates that can be refined and customized as needed. We should allow the ability to enable notifications and proactive alerts and set those parameters with guidance so that you aren't creating a spam storm for yourself or others.

This is the realization of CDX in proactive use cases. The software should be able to tell users when they should do something or when something happened where proactive actioning is required. Consider, for example, that the primary path for your network is about to go down; you can switch paths proactively; a new support ticket is auto generated to address the primary path and you were able to get that notification on your watch as well as a graph on the dashboard tracking this pattern. This type of evolution requires some focus and a team that is open to

change and innovation. It will take time and effort, but in the end, you have a more intuitive, more accessible, more reliable, and even a more enjoyable experience for every ‘driver’ across your network.

A look outside the window

So far, we’ve looked at how the evolution impacts us and our internal operations-centric teams. These types of easy-to-use-and-understand tools allow you to leverage the power of the data on your network. This in turn results in a lot more people that are impacted—not just those internal to your company, but also potentially your customers.

Think about the opportunity for self-service, about being able to give premium visibility at the circuit and service level and how valuable this information would be from an understanding, troubleshooting, and time-saving standpoint. Taking this same CDX® mindset and applying that to external customers is a logical and powerful next step.



Figure 3: Self-service transformation
[click to enlarge](#)

To revisit the transportation analogy, the further we evolve to the right, the faster we can move. Autonomous networking or data-driven actionability allows us to move beyond the need for people to do simple repetitive tasks—at times reducing or even removing the need for the human factor when we have a better understanding of the network, business rules and network best practices. This type of automation can expose information about the network to other applications, groups and people as well as reduce the need for human touch. Recognizing our industry will continue to move forward, we need to be ready, or we may find ourselves showing up to a drone race in a station wagon.

The driver’s seat

Where and how we work is changing. The day is coming where large buildings housing network operation centers (NOCs) made up of tons of screens, swivel chair workflows, and shift after shift of highly trained technicians and engineers will be a thing of a past, replaced by a personalized UX to remote employees. The pandemic has only accelerated this shift toward a work-from-anywhere model. As a result, this will have a profound impact on IT and security—in fact, it already has.

A true multiplatform solution is a natural extension to support this shift. It's Any Time, Any Where, Any Device ([ATAWAD](#)) to get people the information they need regardless of what device they prefer. Internet traffic and consumer software has evolved, naturally, toward mobile due to the ease of use, distribution, and connectivity. This becomes powerful with notifications and being able to keep key metrics and service level objectives top of mind. The result is establishing an 'only what you want, when you want it, the way you want it, anywhere you want it' environment.

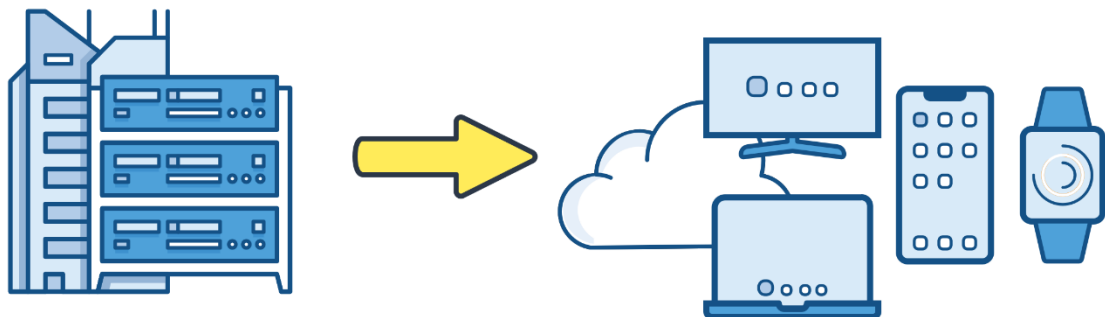


Figure 4: Building to the cloud

The road ahead

Current trajectory and approaches are not bringing the desired results as today's network management software is slow, error-prone and requires continued specialized training. This puts the burden of this evolution on the people and teams rather than on the software and technology. Even when you have the right people and software, the critical information is often buried among meaningless alarms, backlogs of data and only available to that limited audience of specially trained individuals. These challenges once more place the burden of communication and status on the individual when it's something that technology can and should be able to easily handle.

We need to evolve to self-driving and beyond to scale faster. In the leap from one mode of transportation to the next, we feel the growing pains of the unknown. Realizing that our most valuable asset is our people, this continued push towards CDX and understanding the value of concepts like personalization, autonomous networking and ATAWAD will help us navigate the road ahead. We already know it will include network transformation toward open and disaggregated networks. To make certain we are ready to drive in this future, we must start to prepare now, or we won't be ready to take full advantage of what this new technology can provide. This is the new world of UX in network management.