

The Industrialist

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“Composability is a lot like jazz music, where different instruments come together to make amazing music, all unified by a syncopated beat.”

Earl Newsome
CIO, Cummins

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How Cummins' composable strategy is powering reinvention

Each month, we speak to a different industry leader about their approach to innovation and emerging trends impacting the industrial sector. For this edition, we talked with Earl Newsome, CIO at Cummins about the importance of adopting a composable strategy that lays the foundation for reinvention to win in the experience economy. And why a digital culture and talent that feels it truly belongs is the key to bringing all those elements of composability together in a harmony that inspires the entire company to do better.



[How composability relates to reinvention](#)



[Tackling the talent gap](#)



[Securing a sustainable future powered by technology](#)



[Outlook: Paving the way for flow-based computing](#)

In conversation with Cummins CIO, Earl Newsome



Earl Newsome
CIO, Cummins

Earl Newsome understands the power of a good harmony. The CIO of Cummins, a leader in manufacturing diesel and alternative fuel engines, generators, their related components and technologies, is working to lay the groundwork for a future where every customer can expect any product to be powered by any fuel or alternative solution of their choosing, in any scenario, with all the elements of the organization working in harmony to enable it.

“Our customers are demanding performance, quality and uptime to be the same across all diverse energy segments,” says Newsome. “They’re expecting a Cummins-like performance in the diesel space to be their same experience in the electric vehicle and fuel cell space.” This presents a huge opportunity for Cummins to win in an evolving marketplace.

We talk to Earl about how his team is helping to unlock the power of technology and laying the composable technology foundations to take advantage of technologies like augmented and virtual reality, generative AI and gesture and voice control, to win in the experience economy. Earl also shares why a diverse workforce that feels it truly belongs is the key to success.



What one word describes you best?

Really, it's an acronym, MIMS, which stands for "Music is My Savior".

DJ-ing is my passion, and I chose this word because you can see the power of music – it can move a crowd through positive vibes, the lyrics, as well as the beats that

permeate your feet and make you move. It's a real inspiration to see people dance to the power of music and lyrics. I'm an actor on the stage when I DJ, and I can tell a story that can move the crowd. That's leadership. As a CIO, we can do the very same thing.

Can you tell us about Cummins, and your career journey to date?

Cummins is a global power and technology leader, designing, manufacturing, distributing and servicing a broad portfolio of reliable, clean power solutions.

The business operates in five segments: we provide engines; components that surround those engines; services support for those engines; a power system segment; and our Accelera business, which brings new dimensions to power our industry segments. My journey to becoming CIO

began as a West Point graduate. I spent ten years serving in the military as an officer in the Signal Corps, which is responsible for the Army's entire system of communication.

Then I spent ten years in consulting, starting at Andersen Consulting all the way up to being a partner in Deloitte Touche. I've spent the last 20 years in corporate America and various leadership roles, most recently appointed CIO at Cummins, responsible for all our IT functions.

How does the concept of Total Enterprise

Reinvention apply to Cummins?

And how are you helping unlock the power

of technology to make a difference?

Let me start with the industry as a whole and how Cummins wins in our marketplace to set the context for reinvention.

Overall, the **theory of our business** is that we offer better **PQU** – performance, quality and uptime – than our customers can get anywhere else. By **performance**, I mean in terms of torque to get the job done and move a rotor, rail or alternator. We also do it in ways that deliver against the emissions criteria for the economy. When I talk about **quality**, our engines and components are designed to be always on and run for long periods of time. When I first told people I was joining Cummins, they said ‘I have a Cummins engine in my truck and I count on it to be on all the time’. That’s just part of the mystique of the Cummins quality we create in the marketplace. Finally, our customers want **uptime**, delivered through a robust service and support network, combined with a great cybersecurity product strategy.

In terms of **trends impacting our industry**, they’re characterized by a model I call “ACE”: automation, connectivity and energy diversity. Then I put the word “hyper” in front of ACE. Hyper-automation is when your power use is extremely personalized, whether it’s in an electric vehicle (EV) or in your phone. To achieve this, you need hyper-connectivity, which means billions and billions of connected parts that help us understand how you consume power so we can maximize that battery’s lifetime. Lastly, it needs to be energy diverse,

from fossil-based fuels to non-fossil-based fuels to fuel cells to electric batteries. And dare I say, dilithium crystals.

When you look across this energy diversity spectrum and our theory of the business, you start to see something emerge in our industry: reinvention. PQU is the cornerstone of the diesel, fuel cell and fossil fuel business. Our customers are now demanding that PQU is the same across all diverse energy segments. They’re expecting a Cummins-like performance in the diesel space to be their same experience in the EV and fuel cell space, giving Cummins a great opportunity to deliver our competitive advantage across a diversity of energy suppliers and energy containment mechanisms and win in the marketplace. So, in order for me to service those diverse Cummins business segments and their differing needs for delivering that level of PQU throughout, I need to think about what we have to do in our core and Accelera business to ensure we’re capitalizing on those opportunities. Number one for me is the idea of **composability**, meaning having the right business architecture, technologies and adaptive mindset in place to support each the traditional and expansive business. Composability is a lot like jazz music, where different instruments come together to make amazing music, all unified by a syncopated beat. We need to adopt a ‘Lego-like’ mindset; part of Lego’s appeal is that you can build exactly what you want and re-assemble as needed. It’s that modularity and agility that gives composable technology its strength, that ultimately encourages interoperability.

We need a composable approach to how we partner with companies to service the needs of our supply chain, how we do mergers and acquisitions (M&A) to support this, and to how we create and deliver those deals. Composability is also key to how we're going to deliver those business outcomes. That means a composable architecture that's built to move at the speed of business - whether it's the diesel business or the fuel cell space, we need a composable architecture to deliver all of our solutions across that diverse energy spectrum. Lastly, as we begin to rethink how we modernize our IT culture, we have to bring composable thinking to every one of our individuals. At Cummins, we're going to be thinking about ways of allowing people to move at their own pace to deliver composable solutions that leverage composable architecture, or to deliver composable M&A practices across the whole composable spectrum. Composability for us boils down to those three things: how we're going to deliver M&A deals, our architecture and how we deliver solutions and business outcomes, and how we're going to modernize our entire IT landscape.



Can you talk more about digital culture, and how you're building up those skills to support the business?

We won't get to this composable strategy unless we *build the talent necessary to deliver it. It begins with our people, and trying to find and build the talent that we need. We're focusing on diversity, equity, inclusion and belonging.*

In order for us to get the talent we need, we have to be more focused on diversity because talent is equally distributed, but opportunity isn't. We do ourselves a disservice if we only focus on a subset of the population – why not focus on 100% of it? Diversity means going after 100% of the available talent pool to find talent that's going to fuel our composable thinking architecture and approach to M&A. Diversity begins with this concept of being invited to the dance party, equity is being able to dance, inclusion is being asked to dance. However, belonging is wanting to dance as if no one's looking at you. I'm hoping to create an organization where people want to dance as if no one's looking at them. The way we're going to achieve that level of belonging is to create an organization full of psychological safety. Psychological safety comes from four things: inclusion safety, which is this notion that in order to be included, all you have to do is be human and do no harm; learner's safety, so you can learn without fear of being ridiculed; contributors' safety, so you can contribute without fear of your contribution being dismissed; and challenger's safety, so you can challenge ideas without fear of retaliation. So, in order to create that organization of belonging, you have to create an environment of psychological safety built around those four elements of safety.

That's my strategy to find and bring onboard new talent, and ensure they feel they belong.

That will earn their discretionary effort and allow the company to count on them to deliver the outcomes that we need.

We also need to expand our thinking around what technologies and capabilities we need. There are three key factors to achieving this:

1

Moving from a credentials-based perspective to a skills-based perspective.

How do we look for skills instead of credentials? This focus will eliminate and drive down the college requirement and bring up the skills requirement needed to futureproof us for a composable future.

2

Moving from STEM to STEAM.

We need STEAM (science, technology, engineering, art, math) talent because we live in a world which is an experience economy. That demands a new set of skills to create memorable experiences for all consumers of technology. We will need digital anthropologists and UX designers to inject some art into the technology that we deploy.

3

Go to new places to find new talent.

There's an opportunity/aptitude gap, and it's at the zip code level. If we can close that gap, we can find the talent we need to fill the resources we'll need in the future.

The aim of all this is to expand where we look for talent, ensure we're looking at 100% of the available talent, extend our capabilities and inject art into what we do to deliver the solutions we need now and in the future.

From a technology perspective, what are you and your team doing to help drive Cummins' sustainability agenda?

Sustainability is an important part of Cummins and our company is uniquely positioned to support a zero emission future.

We offer multiple solutions for cleaner energy and with the launch of our Accelera by Cummins brand in March 2023 are advancing a range of zero emissions solutions, including hydrogen fuel cells, batteries, e-axles, traction systems and electrolyzers, to sustainably power a variety of industries from commercial transportation to chemical production. We are also already leaders in emissions compliance. So, whether you're on the fossil-based fuel side all the way up to battery electric, we're leaders in the concept of wells-to-wheels emissions policy. Our wells-to-wheels perspective is about driving sustainability across the entire spectrum, from upstream to downstream. Technologists should also focus on three things to ensure we're creating a better planet for our kids:

1

Housekeeping.

How do we ensure that the systems that we operate are optimally operated from a housekeeping standpoint and not generating or employing more power than necessary? That means being smart in the way we acquire PCs in any of our peripheral elements or infrastructure, ensuring we provide the necessary housekeeping to ensure that they are energy efficient.

2

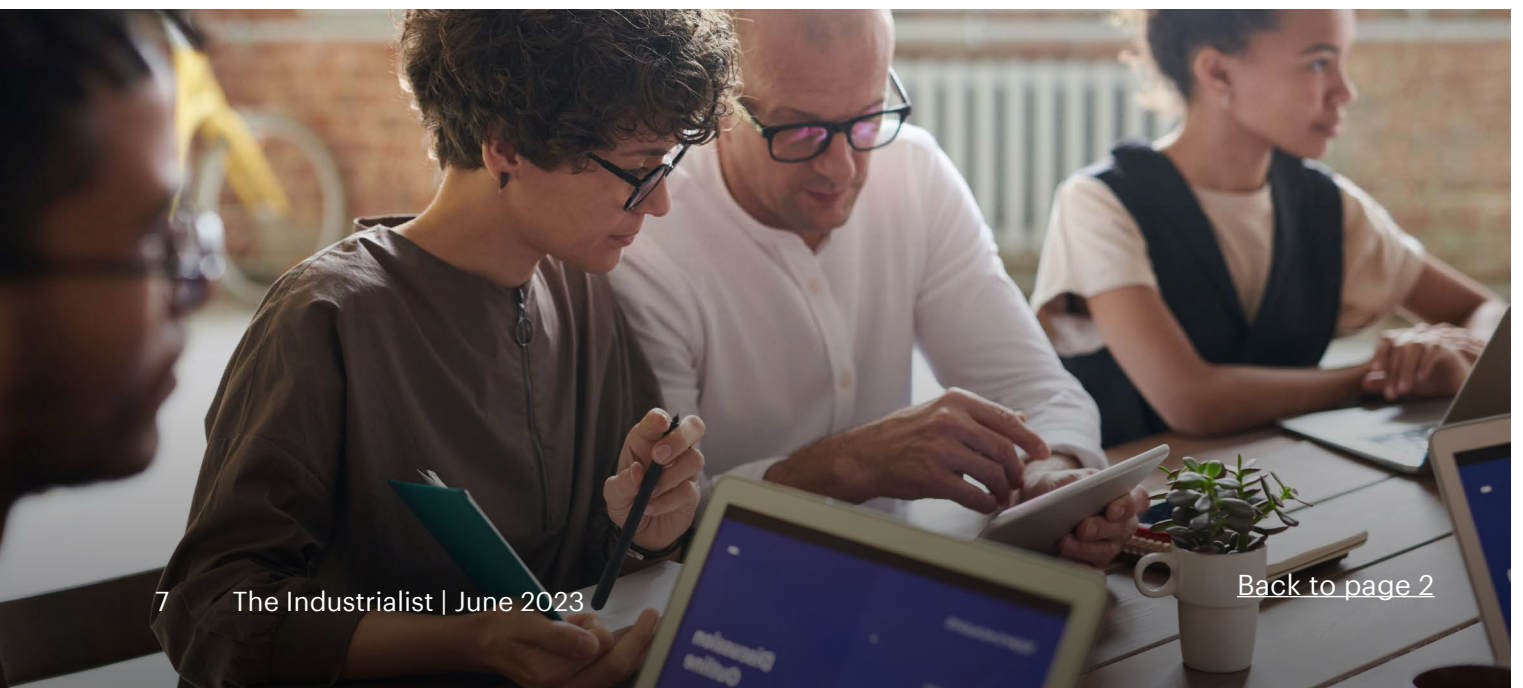
Data centers.

Data centers are the largest consumers of power from an IT perspective. Our move to the cloud, smart data centers and smart cloud investments with vendors and suppliers is driving our zero emissions perspective.

3

Supply chain.

We're procurers of lots of technology. Through our supply chain initiatives, we work with suppliers to ensure that they are working on clean energy solutions as well.




What technology trends will be the game changers for the industrial industry?

The future of computing will see a continued maturation of human-computer interfaces, where anything could be a screen and anything can be an input (voice, gestures etc.).

This will help “**flow-based computing**”, the idea of computers working within your flow versus you having to work in the flow of the computer. This is the next generation of the experience economy. A perfect example of a flow-based system would be reinventing an industry –for example, airport check-ins. Luggage will be identified as you drive up to the airport, then you can drop it at the front. The airport knows who you are and automatically routes the luggage to the inspection station, then onto the plane. You walk directly from your car to the plane after being visually identified through a scanner. You will sit on the plane and it knows that you’re in the seat and that you’re between trips and you got halfway through your favorite movie, so it starts you off where that movie left off. To me, that’s the vision. There are so many areas where flow-based computing can make experiences fantastic, from the emergency room to a service bay. This will be helped along by things like natural language processing, so you can interact naturally.

Generative AI will transform how we search online, and make it conversational. That will change the way that humans interact with computers and make it more transparent, flow-based and intuitive. Conversational search is a flow-based model. Then human-computer interactions will evolve to be based upon gestures, voice, anything in your flow. **Augmented reality, virtual reality and mixed reality** will also be key. We will be able to bring those realities to you or your flow without you having to go to a virtual world. You will be able to see it through the vehicle lens if you’re in a car or through some sort of ocular lens. If you’re wearing glasses, you can begin to see and navigate your world in a new and different way, based on your flow.

The adaptation of flows to human-computer interactions, leveraging these technologies, will create new, amazing experiences and change the way that we operate in our personal and professional lives. In the industrial business, you can see that happening. When you come into a service bay, that whole interaction will be different based upon your flow. The inspector could do a visual inspection and show you the results – a cracked oil casing, a new part, where it’s from and when it will be delivered – virtually. Sensors around your vehicle told the service bay you were coming and to be prepared for it. That is flow-based computing.

A woman with her hair tied back, wearing a light grey blazer over a white t-shirt and dark blue jeans, is standing on a blue and white tiled floor. She is holding a smartphone in her right hand and a black electric vehicle charging cable in her left hand. The background is slightly blurred, showing what appears to be an indoor setting with large windows or glass panels.

Previously, we've done a lot of work around journey mapping. But it all relied on physical interactions with the web. Thinking about human flows gives us a different paradigm for how technology can enhance experiences. The experience economy is an evolution of economies. We started out with the agricultural economy, which gave way to the industrial economy, then the information economy, then the digital economy, and now the experience economy. This will give way to experience transference, where people take their expectation of an experience from one transaction to another, irrespective of the origination of the original transaction. So, people will take their experience from an Apple store and are going to expect a similar level of service in a mobile gas station. They will want to wave their phone and instantly be recognized, the station to know they always use unleaded gas, and to automatically make the cash transfer for the sale without pulling out a card. Experience transference means you no longer have to compete to be best in class. You have to be world class. You must take the best consumer, professional and industrial experiences and try to find ways to have that experience harmonized across all different perspectives. This will be the experience economy.



What inspires you the most?

The power of music. The power of music combined with lyrics and the right storyteller can bring us together.

When I think about Cummins and our perspective on diversity, that's winning with the power of difference. And there are some great stories about the power of difference in music. There is a story that's told in country, rhythm and blues and put together by different artists singing together. It was a powerful combination: Paul McCartney, Michael Jackson and Ebony and Ivory. There are lots of music collaborations that show us how we can come together as a people with our different perspectives, dreams and abilities to dance and sing. And when those things come together, oh, what a beautiful sight. I'm reminded of something my mom, who has passed, once did. She was able to leverage music and some other activities to bring Martin Luther King Day to Arizona. She brought Arizonians together to celebrate and engage in the concept of Martin Luther King Day. And that was just one of the things that she did through music. So, when I think about the power of music and winning with the power of difference, we can do that through powerful collaborations. And that's what inspires me – our ability to bring people together and to dance as if no one's looking at us.

In closing

Industrial businesses are searching for ways to bolster their competitiveness, resilience, profitability, and growth. In doing so, most business leaders in the sector now recognize the time for incremental or piecemeal transformation has passed. What's needed now is a more comprehensive overhaul of the entire business, centered around a strong digital core.

Why a strong digital core & culture is key for industrial reinvention

To maintain their commitment to reinvention in these turbulent times, companies need a cohesive, consistent, and integrated approach to transformation. For years the guiding pillar of enterprise innovation has been taking processes, even whole parts of the organization, and digitizing them. The next wave of business transformation is about putting that digital foundation to work and creating a new shared reality that seamlessly combines our physical lives of atoms and our digital ones of bits. This is also highlighted by the insights Cummins' Earl Newsome provided in this edition of The Industrialist around composability and reinvention as well as tech trends like generative AI and flow-based computing.

Cloud, AI, and the metaverse, in particular, have accelerated to such degrees that they dramatically speed up change, bend the innovation curve and create more and more value for every business and organization. Look at [generative AI](#). Interest in language-based AI – the technology underpinning applications like ChatGPT – is surging, with new tools capturing the world's attention faster than any other recent technology. But how people are using them right now—to create digital images and content— is just the beginning. We can already see that this technology is poised to shape the future of science, enterprise data, how we design and manufacture products, and so much more.

Technology alone cannot deliver the total reinvention required. Industrial businesses need a strong digital core and will also need to address their organizational culture and their talent needs,

especially the seemingly ever-present skills gap within the sector. [Our research](#) found that talent shortages were the second most prevalent factor slowing down reinvention efforts, impacting almost two-thirds (64%) of industrial organizations surveyed. To overcome this challenge, there needs to be a focus on talent and technology acumen, as reskilling and new digital-related skills in areas such as software engineering, data science, and experience design are becoming increasingly important for industrial companies. One way to do this is to develop a data-driven understanding of the organization's current skillsets, at both the individual and the organizational level. This allows the company to identify and address skills gaps both holistically and on a case-by-case basis, which is key to unlocking opportunities to upskill the workforce while ensuring the business has access to the talent it needs.

Culture is equally important – as also emphasized by Cummins' CIO in this edition. Businesses will quickly fall behind if digital skills and data literacy aren't made core competencies. Successful reinventors will therefore look to instill digital acumen not only across the C-suite but also, most importantly, consistently throughout the entire organization.

Best regards,



Thomas Rinn

Senior Managing Director,
Global Industrial Lead, Accenture



About The Industrialist

The Industrialist is our monthly digital magazine that puts game-changing perspectives in the spotlight. It combines thought-provoking content and insights, to keep you on top of what's new in the industrial industry.

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