Fifty years on … HPE NonStop in 2074!

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A consideration of one possible future for NonStop as Sponsored by NTI

It was inevitable as it was obvious. An evening walk with my grandfather. He had spent the past fifty years working with technologies and, given as it was 2074, the technology changes he had witnessed could only be described as dramatic. Walking from his office I caught a glimpse of framed emails he had kept as artifacts from his earliest days in IT; a rare sighting by any measure.

As a new hire fresh from college, he had joined HPE, as it was called in those years. Following a series of mergers followed by a number of spin-offs, it was hard for me to visualize what it must have been like back then.

> **What you think of today as technology didn't exist back then but circumstances changed and ambitions exploded," he said. "I recall clearly when individuals wrestled total control of tech away from state-supported institutions as the idea governments could foster any level of cooperation needed to break through barriers.**

Quickly revisiting the past and stories that I've heard before, I was reminded how grandfather, having joined HPE had elected to work in the niche business unit, Mission Critical, where his specialization was the NonStop system. At a time where proposed tag lines included "won't stop; can't stop; NonStop" the concept of fault tolerance was not widely followed by mainstream vendors. There were even whispers down corridors that it was outdated, unneeded and perhaps a legacy reminder of the uncertainty of then-current technology.

Today, fifty years later, so much has changed. At the highest level, all enterprises are tech vendors so much so that specialization has created many niches. Continuous processing entered the mainstream long ago and was a contributing factor in the transformation of HPE, a company we all know today as HPT (HP Technologies) - as the addition of Enterprise and addressing the market for businesses that cannot stop became a minor case of tautology.

As for Mission Critical, given all enterprises now have to run 24 x 7, that term is now the sole brand of the myriad number of satellite and space craft launch and tracking companies. A return to the past or perhaps more like a truly back to the future scenario. However, it did lead to HPT viewing its NonStop program as central to the company, renaming it Enduring Computing extending HPC, AI to include EC.

> **Forget about flying cars and private ownership in cars as that all went the way of horses at the beginning of the twenty-first century. It may have taken a hundred years of transformation to occur but cars are now solely in the hands of entertainers. As for flying cars, the need to cover any distance has receded as society returned to a village lifestyle. Who wants to go anywhere beyond the village green?**

Remember the pioneering that began almost fifty years ago when in 2026, NASA succeeded with controlled hibernation where those travelling in space had their metabolism depressed in order to introduce a state of deep sleep utilizing specifically designed chambers where the temperature hovered around 5 degrees Celsius?

While primitive compared with what was projected in popular science fiction movies, it proved a simple way to pass the time in long journeys into deep space. The primitive extraterrestrial villages that have now taken shape not only on the Moon and Mars but in the creation of orbiting retreats that we now see circling the planet. You might say that the art of the twentieth century predicted such outcomes but all the same, it took very large commitments from determined individuals to become real.

All of this has come about as space tourism truly took off and the presence now of these orbiting retreats are a result of the investments made by private enterprise. And this is where the work my grandfather had pursued has born the most fruit. For the past fifty years, even as the reliability of technology improved out of sight, software in general and the many frameworks that they support, became so complex that their reliability suffered. This took the NonStop into new markets and saw a resurgence of interest in all things related to NonStop.

And support of EC applications became more visible and not just in space but closer to the ground. Clearly, there became a growing reluctance to rely on systems other than NonStop when it came to the chambers supporting space travelers placed in deep sleep. But that was just one application. Where acceptance of NonStop within EC accelerated happened much closer to home.

> **Cities went vertical; communities became self-contained and self-sufficient. A very different interpretation of what it meant to be living in a village, but the outcome was similar to what had been popular centuries ago," said grandfather. "And the credits we all depend upon today took hold just a decade or so ago whereby older forms of currency have been retired.**
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> **Trust in each other returned and while far from being a barter-system revisited, the arrival of a living wage changed the dependencies on currency we once had. Now it is a concept managed by a combination of AI coupled with certain biometrics from the gait of our walk to the interaction with our own augmented intelligence.**

What grandfather considered vital to the economy of the day, the flow of cash globally, presented many problems so much so that countries became skeptical about the true value of cash and cash equivalents. Central Bank Digital Currencies or CBCD had their moment in the sun but they too eventually fell out of favor. Anything that was recorded in a computer anywhere on the planet was subject to intrusion with funds disappearing overnight. The early dabbling in BitCoin was one example where fortunes disappeared simply because complex keys / passwords were lost or just simply forgotten.

> I have to admit, I like it the way it is today," said grandfather. "I was always concerned that all I had worked for would somehow mysteriously disappear, without trace and without recourse. But this proved to be an ideal problem for our NonStop team to address. There was so much experience in handling currency across vast global networks we all knew that there had to be something better. And it wasn't a call to return to collecting sea shells or passing of beads but rather, something vastly different and more in keeping with the times.
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> With that, the idea came about that digital currencies, blockchain maintenance, smart contracts were so last century even as they were still prone to compromise given the power of computers. But with NonStop and its smart OS – the very name Guardian proved to be a highly marketable attribute that was picked up by global financial institutions. "If you had been watching the uptick in usage of bar codes, QR codes and more and combine that with our own DNA you get the idea as to what came next," said Grandfather.

And it took the world by surprise as NonStop proved to be the safest platform to network today's Familiar Code or FamCo a revisit and combination of what some think came out of family tree and hereditary pursuits. But no, it was more precise and all it required was to rethink what was happening at the edge. We finally saw the penny drop, so as to say. People are the ultimate edge 'product' and as such, to participate in society, they needed to have a NonStop function present that was a reflection of themselves.

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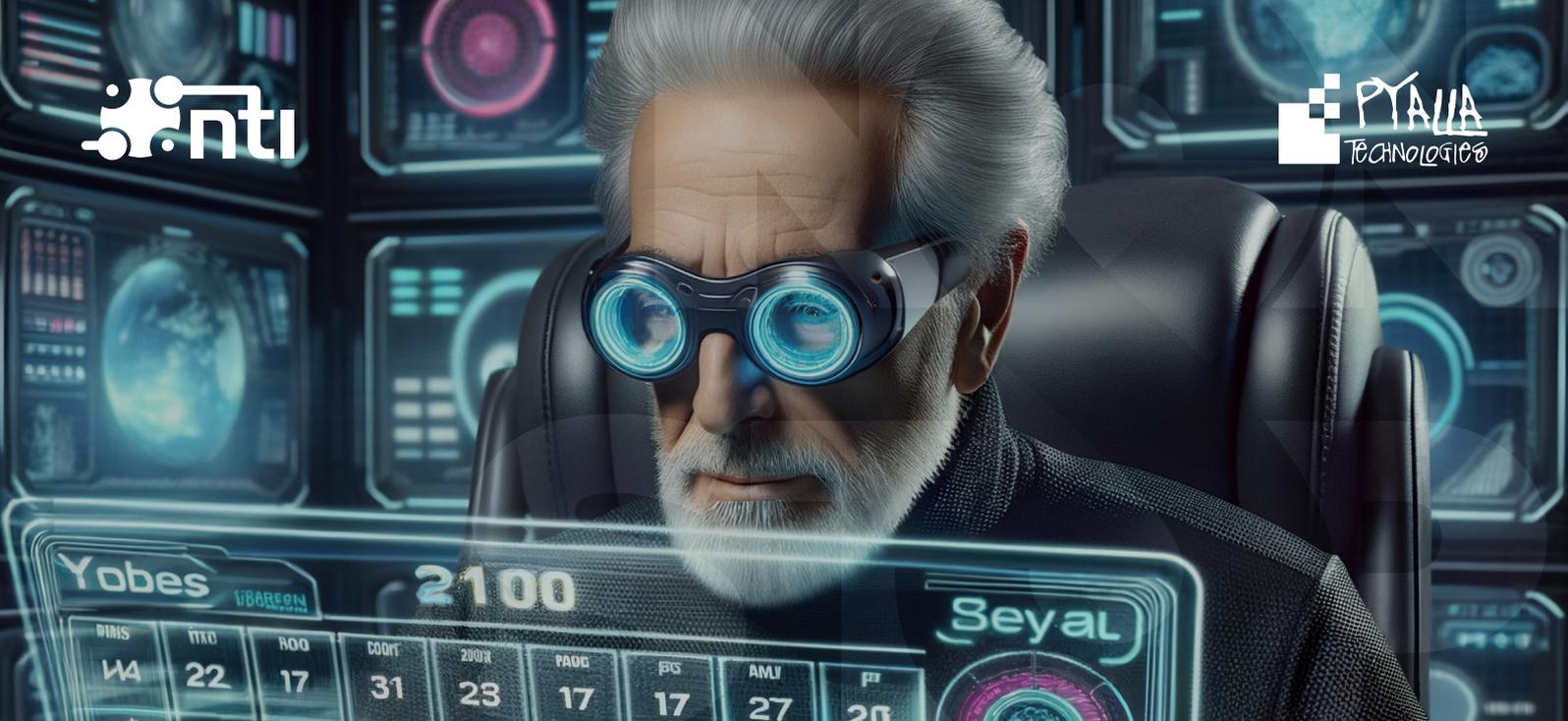
What made it more secure was a combination of AI and Quantum.

Grandfather recalled a conversation during the first weeks of his employment. Talking with the leader of what was then HP Labs, he learnt of how, "NIST completed its post-quantum algorithm recommendation work late-decade 2020 and then it became the basis for FIPS regulation shortly thereafter; regulated enterprises were required to switch to Post-Quantum Cryptography. Of course, this meant the then-banking fees went up: The transactional enterprise of the day had to pay to future proof themselves, but that was just a new cost of business, it doesn't create new opportunities, it's just substitutional.

That became a two-edged sword that created new business opportunities for NonStop. Global realization that having cash in circulation would continue to present problems so why continue any dependence on traditional forms of payment? No cash, no central control, not traditional passwords but just your presence as another edge entity. Perfect application for NonStop. Having fallen out of love with open source and the like that turned every enterprise into a software product company, NonStop became a popular virtualized distribution that moved to the very center of HPT's product portfolio. No, back at the time NonStop celebrated its Anniversary #75, the presence of NonStop was almost everywhere you cared to turn.

Humanity became the edge so often described in former publications we are now familiar with. As grandfather described it, referring back to his framed collection of email exchanges, "About the time of the true Diamond Anniversary of NonStop and the arrival of augmented intelligence (allowing humanity to interact seamlessly with their environment) having become the gateway to their means of living, no one wanted to be plagued with the glitches and failures of the early twenty-first century. We realized that redundancy by itself would only take you so far and was still vulnerable to many forms of nondeterministic outages so NonStop stepped in and quickly proved itself."

Again, one more instance of not just AI meeting Quantum at the edge but rather, a response to the commercial reality that humanity was moving rapidly to where failures of any kind were considered a flashback to the dark times of the former century. No longer was NonStop considered legacy but rather it brought with it a viable model for all to follow. And the new HPT held the keys to its ongoing success happily riding the latent interest in a platform it had championed for many years.

None of this would have happened if technology continued to depend on silicon. "We recognized that the possibility of Moore's law driving another 25 or even 50 years was a luxury that would be holding us back," as grandfather recalled exchanges with HP Labs. "At the time, there was nothing more novel or challenging to integrate than quantum. To integrate quantum with transactional computing no longer was the exclusive realm of science and engineering. The union of simulation / modelling PLUS massive data analytics (much supplied by the transactional systems underpinning commerce or by the engagement systems that drive us to transactions) PLUS AI / ML is now at the heart of the hypercompetitive enterprise with which we interact daily.

This integration of quantum with transactional accelerated the way it did as we moved from our dependency on silicon and copper to optics – light replacing copper but more importantly, there was a breakthrough in how best to use light to mirror what was previously done by transistors to deliver logic. We knew about the need to exploit light coherence even as we continued to look for something else to arrive on the scene – biological, perhaps? "But it was light that guided us, chuckled grandfather.

> There was a shift in thinking that led to a breakthrough and ultimately, it wasn't a surprise to any of us working on photonics. What made many of us laugh was just how many governments poured vast sums into developing their own fab plants just as we were working hard to leave silicon behind us. Then again, governments always seem to back a horse when the race has moved on to cars.
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> Throughout the history of technology, there have been "phase change events where the conventional wisdom of how business conducts itself resists change until suddenly something shifts just enough to precipitate change," said grandfather reading from a saved, half a century old, paper email that he framed and now hangs in his office. "We should have been used to such occurrences but all the same, it changes everything.

For much of our history, science indeed life has imitated art.

For much of our history, science indeed life has imitated art. Many of the movies and television shows of the previous century led to incredible inventions for the times. From Star Trek came doors that opened as we approached; personal communicators that led to the first flip phone; MRI system development owes its inspiration to Star Trek. And then there were the replicants in Blade Runner and even the warnings that came with The Matrix.

But perhaps it was the film 2001, A Space Odyssey, that triggered the continued interest in light and optics and photons. Towards the end of the film, the main character began disabling the computer, HAL. To our eyes, all that the character was doing was removing what then looked like glass flash memories connected to a backplane that was clearly light-centric. That was all it took to drive many of the scientists of the early part of this century to look into the concepts and to push ahead with the research.

> **The power that was ultimately released with computers that we freed from silicon, copper and the predictions of Moore's Law was all that was needed to fuel the acceleration in AI and Quantum. We no longer talk about our robots as driven by AI but rather, we already view them as Intelligent. Once they tapped into the world of knowledge, digitized and accessed through ethical LLMs, they understood their surroundings far better than we could ever hope to achieve.**

The rub is that now it is the robots that view humanity as AI being redefined as Augmented Intelligence. A reference to the early work by Neuralink (now a subsidiary of HPT) creating brain-computer implants that have become both necessary as the pursuit of even greater processing power has become fashionable. "Who would have guessed we would be as welcoming to something foreign implanted in our bodies as happened midcentury," said grandfather.

Even now without further commentary from grandfather, rich, evocative AI mashup with 9G and the latest iteration of WiFi where quantum filters out the noise to keep us entertained, created new and unexpected experiences. These had to paid for and became so critical that fault tolerance, scale and availability of their transactional underpinnings became necessary.

Humanity as the edge needing to network as a society proved to be best served by NonStop being deployed everywhere. Humanity becoming AI needed to be maintained, updated, supported and more, and failure in part or in full during any interaction ultimately proved deadly without NonStop. Most of all, humanity needed security.

Whether we talk about space tourism, our own access to services and even our education and career prospects, knowing that everything about us is now recorded up there – cloud computing had become so ubiquitous that it no longer had a name other than "up there" – humanity on the whole looked most of all to safety. And now, for a hundred years, NonStop has provided the safety humanity needs to function today.

At first Quantum secured us and made sure our interests were not parlayed into something unrecognizable. At every step, it wasn't just realization that NonStop contribution kept it all working but rather, the principles of NonStop were now licensed universally to all technology companies looking to support the enterprises we have today, 100 years after the first NonStop system was delivered to a bank.

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Throughout my fifty years working at HPT and focused on NonStop it was the belief that in a world that doesn't stop, where the transactional world is tightly integrated with the quantum mechanics and humanity has begun to move freely in space enjoying sights we could only dream of in the last century," said grandfather

It was realization that nothing we interact with ever stops or worse, simply goes offline for goodness knows what reason and where everything takes place at the speed of light, NonStop systems emergence as the foundation for how the world works today shouldn't have come as a shock to anyone. And thankfully, those investments of the past fifty years have truly delivered NonStop in miniature, in glass and photons and yes, licensed to everyone where the world today we live in can arguably be viewed as the old song goes, the planet that never sleeps.