



● ● Victor Wollesen, CEO at Per Vices

Per Vices Corporation is a Canadian company headquartered in Toronto, Ontario, developing high performance software defined radio (SDR) platforms that are designed specifically to exceed existing requirements for telecommunication providers, networking and wireless equipment OEMs, academic and research facilities, semiconductor manufacturers, information security analysts, defence and public safety providers.

Supporting demanding applications ● ●

Per Vices builds the Crimson SDR platform; a high performance, multi-channel, and phase coherent software defined radio that supports demanding applications in defence, telecommunication, and infrastructure markets. Amy Saunders spoke with Victor Wollesen, CEO at Per Vices, to find out more about the company's development, market presence, and its outlook for the global military and government communications sector.

GMC: Per Vices has pioneered SDR platforms over the years, earning a loyal customer base in many regions. What are the key milestones in Per Vices' history in terms of advancing its products with new capabilities?

Victor Wollesen: Though the company was founded in 2006, we launched our first commercial product in 2012. Originally called Phi (the name was later changed to Noctar), it supported independent receive and transmit channels, over 125MHz of instantaneous RF bandwidth, and communicated over a PCIe bus. The combination of price and performance helped drive great media coverage, which helped drive our subsequent products.

Two years later, we released the first iteration of our Crimson platform. Incorporating many customer suggestions, we increased the number of independent receive and transmit channels to four, increased the tuning range to 6GHz, and improved the maximum instantaneous stare bandwidth to over 300MHz. These changes saw us move to a rack-mountable 1U form factor, and a dual 10Gbps optical interface for passing data.

These features helped drive additional customer interest, and saw our platform integrated into high performance products within defence, telecommunications, and test and measurement markets. They also helped shape the latest revision of our Crimson platform, released in 2016, and that includes additional support for phase coherency, sample rate clocking, and better radio chain performance.

This release has already been incorporated into various product lines, including radar systems, low latency communication links, and defence applications.

Seeing our product used in such diverse applications has also informed our support and marketing strategies. We've recently released a new 'Build Your Own SDR' tool that allows product engineers to get budgetary pricing on product variations based on our existing platform, to better illustrate the value and performance our platform is capable of.

GMC: Per Vices' latest creation, Crimson TNG, was launched in 2016. What can you tell us about customer feedback to date, and the potential for future iterations?

Victor Wollesen: We place significant value on customer feedback and support. The feedback we receive from our customers, along with the support we provide, help us build a better product, and directly inform our development road map.

The technology and architecture that allow us to deliver wide-band radio performance and integrate complex DSP also provide the largest basis for user

GMC Q&A



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feedback – from design suggestions, to feature requests that are common across different applications.

Among the major features we introduced with Crimson TNG was support for phase deterministic latency, including modes that support constant phase offsets between channels, and support for various types of triggers.

Our sales process sees many first-time customers purchase a unit, analyze its performance against their target specifications, and request hardware, firmware, or software customizations to ease integration gaps or close demanding radio specifications. This usually involves changes to firmware, hardware, or software, which we can support using our rapid development capabilities.

We're currently working on specifying our next model, and it looks like it will see increases in channel count, bandwidth, and tunable LO range.

GMC: What can you tell us about the full support for deterministic phase coherency and latency you recently launched?

Victor Wollesen: The latest revisions of Crimson TNG now provide support for known, constant, deterministic latency between transmit and receive channels. This allows users to transmit the same signal, over all four transmit channels, and see a constant phase offset at each channel output. This is a major feature for applications working with phased arrays or supporting signal reconstruction, and represents a big step forward in enabling an entirely new suite of applications to use our product.

GMC: How big a role does SDR play in the battlefield today?

Victor Wollesen: SDR enables the intelligence, communication, and offensive capabilities that are undeniably critical to effective conduct of modern warfare. Examining the signal intelligence, radio communication, and electronic warfare requirements necessary to conduct and support modern deployments, it is straight forward to see that they all share a common requirement to send, receive, and analyze radio signals.

The current capabilities provided by modern semiconductor technology suggest that SDR platforms are the leading candidates for delivering the performance required by these applications, without compromising the power, weight, or reliability constraints needed for effective field deployment.

GMC: How have your vertical and geographical markets changed in recent years, and where do you see new opportunities in the near future?

Victor Wollesen: Our earliest customers were focused in academic, telecommunications, and research markets. Since the release of our Crimson platform, we've seen our share of the defence, telecommunications, radar, and test and measurement markets increase substantially, with a number of successful product integrations by customers.

We are fortunate to have a wide geographical distribution of customers. Though the majority of our customers are located in North America, Europe, Australia, and New Zealand, we also value our South American and Asian customers, who are rapidly growing and face challenging technical requirements, especially in the defence and telecommunication space.

GMC: Size, weight and power (SWaP) are key to military operations all over the world. How is Per Vices designing its products to deliver the best benefit to end users in the field?

Victor Wollesen: All of our designs attempt to balance the size, weight, and power constraints against cost. We firmly believe that successful, widely deployed, products need to also be able to compete on price and value. Our stock products are designed to provide the best value at the lowest cost – customers purchasing our hardware, or looking to integrate us into their systems, recognize the benefit of this approach.

Our Crimson platform has a very modular design, making it straight forward for us to accommodate specific requirements. By focusing on core application and integration requirements we not only deliver a unit capable of supporting the desired application, but we do so economically.

Delivering a platform that focuses on meeting essential design specifications allows us to deliver tremendous value and unit economics. This focus has directly contributed to a number of successful integrations, and earned us very positive feedback.

GMC: What are the biggest trends you're seeing in terms of the digital battlefield right now, and where does Per Vices fit within that?

Victor Wollesen: As the consequence of allowing the current electronic supremacy to lapse increases, there has been an increased focus in developing the tools, technologies, and applications required to preserve current capabilities. This is most evident when focusing on latency and bandwidth requirements, along with the integration of complex signal processing requirements.

SDR platforms play a major role in ensuring that we are able to meet the technological challenges required to support these operations, especially as others are adopting similar technologies. This extends to man portable radio systems, vehicle-deployed platforms, and temporary or permanent fixed site infrastructure.

Our products are the best choice for delivering on the most demanding radio application requirements in this space, and provide integrators and operators with tremendous value and a strong platform capable of supporting future applications.

GMC: What do you expect Per Vices to achieve in the rest of 2017 and 2018?

Victor Wollesen: There is not much standing still in this industry, so we are already looking at designing and releasing another product iteration over the next 18 months. We're looking to focus our development with the launch of our 'Build Your Own SDR' tool.

This tool allows customers to modify the base Crimson system, and provides immediate pricing feedback. This allows engineers and customers to specify a target system and immediately obtain budgetary pricing feedback, without requiring an email address, submitting formal specifications, or waiting for feedback. It also allows them to easily communicate those specifications to us if they choose to.

We're still working on making it a bit more granular, but we think it's a great starting point to helping us make sure we're effectively focusing our core product development. **GMC**



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