HPC Solves Many Problems – But Who Will Solve The Problems Of HPC?

Have you experienced extraordinary performance of some sort lately – for example, how intelligent cars are becoming or how the fabric on a jacket really does keep you bone dry and warm in the windy rain? It does not have to be complicated – if you have had something as common as chips and coffee lately, you have most probably also harvested the results of HPC in action.

Testing and development of products and fabrics, assembly lines and packaging are no longer taking years to optimize. With simultaneous complex calculations and virtual simulation and research, enterprises are reaching complete perfection in manufacturing, aerodynamics, fuel efficiency and product performance. Futuristic solutions are coming to market in weeks instead of months or years. The industry is not evolving, it is transforming at an exponential rate with the capabilities in hand.

One specifically interesting case is when a shipping firm calculated the cost of transporting the truck tire flaps for all the trips they did. With the calculations and testing done on HPC platforms, the size, weight and material of these flaps were adapted and made the trucks much more efficient while keeping the quality and – most importantly – saving surprising amounts of cash! (read more here)

What might be viewed as insignificant and un-changeable (flaps on truck tires, are after all, not the most exciting or innovative thing out there) can make such a difference if optimized. Earlier impossible – who will take the time and effort and resources to rest out up to 100 different prototypes for what has been the same many years?

Simply said, HPC is now essential to business success in a wide range of industries. Because it is considered a significant competitive advantage, industry players do not like to talk about it. It has become a secret weapon, and who would open their R&D laboratory to the public? What is clear though, is that the laboratory has changed in nature and not keeping up will simply leave you behind.

However, while solving problems earlier unsolvable, HPC brings others to the table. Similar to the advancement of transportation going from carriages to engines, the excitement of the speed and problem-solving is still peaking but we are also facing issues no one can look past:

- **Efficiency.**
  What is the TCO and ROI prediction? Exactly how competitive will your investment make you and how long until you see results and profits?
- **Power.**
  HPC is extremely power consuming as it is essentially doing many thousand computers work simultaneously. The main cost of running a DC without HPC is energy. With HPC the argument does not need to be made.
- **Cooling.**
  They create loads of redundant heat that needs to be done away with. Sophisticated cooling systems have been invented – e.g. liquid cooling, but they also cost to run, further adding to the expense.
- **Security of Power.**
  It takes only one trip to the gas station to realise that non-renewable energy sources are extremely fluctuating in price and availability. As an investor, the access and security of power needs to be unprecedented and the supply as independent as possible.
- **Source and Price of Power.**
  These go together, as the source defines the price. Not only is the world market of energy extremely fluctuating, but so is the availability and price. Emission taxes are on the rise. If you're thinking of HPC, you better think of where you'll source the fuel for your innovation.

Just like discovering oil is running out to run car engines, we are discovering how limited the fuel is to run massive compute. We might be speeding up time to market, but to thrive, a sustainable energy source needs to be found. In the automotive industry, we see electricity incorporated as opposed to pure oil. But who is going to effectively solve the problems of HPC and the IT industry – an emission contributor now compared to the aero transportation? Just like no one would go back to horse-riding, there is no going back in technology.

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The above issues have been under discussion ever since HPC took off, however, as emissions are increasingly connected to legislation and companies are facing an imperative to reduce their carbon footprint, sustainability is becoming a matter of license to operate as a business.

A number of corporations – including leading car manufacturers and academic research institutions have found a way to do away with the HPC problems at once, while getting more for their investment than ever. In fact, boasting 82% saving compared to a domestic location, these companies are thriving in, what the experts call, the optimal place on the globe for running HPC. While saving dramatically, they are sustainably fueling their compute leading to carbon footprint reduction. Because this is a „secret weapon", you will not see publicity around it – just like any other competitive strategic pursuit. Hosting or sourcing your HPC in Iceland is simply a business case like no other:

- Power Is Green and Extremely Competitively Priced.
- The Power Supply Is Independent and Abundant.
- Iceland is One of The Safest Nations In The World.
- Iceland's Optimal Cool Climate Enables Free Cooling All Year.
- The Icelandic Grid Is World-Class and Guarantees Availability and Security

The returns are overwhelming the present investors as they experience the vast benefits of innovating, testing, researching, solving problems and leaving their competitors in the dust. Do not let what might unleash you as a business cause impediments in the long run – know where to build your laboratory and see your enterprise thrive with the secret weapon forward-thinking leaders have utilized and used to win.

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