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Advantages for predictive maintenance in the cloud

What could sound more nebulous and uncertain than "the cloud?" It's no wonder industrial enterprises that take themselves seriously hesitate to store strategic data there. The reality is the cloud is less nebulous than it sounds. Cloud-hosted data reside, like all other data, in databases running on servers, the only difference being the server is maintained off-premise. Chances are the server and the network to which it's connected are more secure than most enterprise networks because security is critical to the survival of cloud service vendors who invest in it or fail.

Large data-centric enterprises, which most production operations are becoming, should be less concerned about the risk of operating in the cloud than the risk of isolating themselves outside it. The cloud's growing popularity can only be explained by its many advantages, starting with cloud computing's four "Cs": context, continuity, collaboration and content.

Context

Most production operations slug it out in highly competitive environments where missed opportunities can be the difference between a good year and shuttering the plant. Standalone data can be a valuable measure of absolute performance, especially for rudimentary applications like variance tracking, but data in isolation cannot be used for benchmarking between sister plants or against competitors. The cloud makes centralizing data from widely distributed sources easy, and that presents opportunities to see information against a backdrop of contextually relevant comparables without which opportunities for improvement remain hidden.

Continuity

For most enterprises, especially production operations, business interruption is a material operating risk as easily triggered by Mother Nature as human error. Data and applications archived in the cloud can all but eliminate the chance of long-term business interruption (unless the event is structurally catastrophic). Like security, reliable archiving is a critical core competency of cloud service vendors, which invest and operate at such a large scale their cost and technology advantages will tend to accelerate over time.

Collaboration

Context is a prerequisite for successful collaboration. Not that teams using silos of sole source data can't be effective, but the potential for farther reaching insights from which the whole enterprise benefits rise exponentially with the breadth of experience the data represents. Used as a central enterprise repository for data from multiple sites, the cloud facilitates collaboration between operations and management in the pursuit of common organizational goals. The cloud can also be used to capture and disseminate knowledge about shared industry goals (like safety in the nuclear power industry) and to benchmark enterprise performance against composites of industry performance. Many IT departments can supply ready access to enterprise-hosted data, but perhaps not as cost efficiently, and certainly not with access to anonymized comparables that an industry-focused cloud service will likely offer as part of a benchmarking toolkit.

Content

There is raw data and rich data, or content. Large-scale repositories of data lend themselves to data mining that can reveal surprising insights from correlations that might otherwise be hard to decipher. The data mining tools and analytical expertise required to deliver rich content may also be scarce in large-scale industrial production operations. Cloud services will tend to offer the knowhow to translate raw data into rich data that can change behavior and improve performance, whether that means reducing cost and risk or improving safety and efficiency.

Cloud service business models, which are newer to industry than elsewhere, are still in their infancies but are likely here to stay. This is because scalable, reliable and secure network infrastructure that offers context, continuity, collaboration and content is becoming evermore important to managing large distributed enterprises.

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