

Accelerating the Path to Reliability

Justin Eames, Solution Design Director, Aspen Technology



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Solution Design Director
Aspen Technology

Justin Eames has more than 35 years of experience in reliability, maintenance and technology-driven improvement. As a solution design director for the AspenTech Asset Performance Management (APM) software suite, he helps companies uncover their specific reliability challenges and create solutions that align with their business objectives.

Justin began his career as a design engineer, and he has also held roles in engineering, sales and value added services. He has been with AspenTech for more than 10 years, following 13 years working at Emerson.

We spoke with him about how advanced technology is enabling companies to drive enterprise-wide reliability by scaling from foundational asset health monitoring to best-in-class AI failure prediction.

What are the greatest asset reliability challenges companies face today?

Justin Eames: The primary challenge in reliability isn't a lack of data; it's a lack of context and scale. There is plenty of data available to help with reliability, but how do you put it in context so that it adds visibility of the equipment in its operating environment?

Then, once you do that, how do you scale? Some businesses have effective reliability plans in place, but they still have billions of dollars in losses from unplanned downtime because they haven't achieved full scale. It's one thing to do something that's successful in a single part of the business, but you have to scale your solution to see the full value.

What is the key to scaling an asset performance management solution across the enterprise?

JE: In the past, you'd typically build a small proof of concept or technical pilot, and then face the challenge of applying it to thousands and thousands of components. To make the scaling process easier, we now use templating.

First, we have to understand the current state and build out a model that can be scaled, focusing on a selected amount of equipment that shows the value across all of your use cases. That gives us a baseline: the health of the asset and what sensors you need, the failure modes you'll look at and the outcomes of those alerts. Then, we can take that template and apply it to another set of data using the same sensor placeholders, dragging the new sensors in and instantly deploying another asset.

Working with one company, we scaled more than 2,000 assets in a week—extremely fast. This kind of scale and automation is only possible because of our templates, which include first principles KPIs from Aspen Properties™, advanced domain diagnostics for rule-based failure mode prediction and now machine learning as well.

How is this advanced technology enabling companies to address their reliability issues?

JE: Just having insights isn't enough—you need a way to manage all of your alerts without getting overloaded, and then get to the correct action as efficiently as possible.



APM technology helps by giving you information that is repeatable and tied to known conditions, so when you see indications of those conditions starting to happen, you know exactly what to do. This technology drives outcomes, actual decisions about what to do and when, by focusing on three specific components:

- **Systems:** These tell us what's working, what isn't and where costs are accumulating. That helps us decide which equipment to get a dataset from.
- **Operations:** If you can get data into operations and make it visible, that becomes insight: knowing what's happening now in the data.
- **Equipment:** We've got to get from insight to understanding what it means, and then turn that into an action that goes back into the maintenance management system.

So it's about the full workflow, with technology enabling it, creating efficiencies and building automations.

How does industrial AI enable more effective enterprise reliability strategies?

JE: The industrial AI embedded in our solutions helps drive key decisions around creating, designing, building and maintaining agents, and there's

a lot of capability to guide you through each phase. For example, when you're building a machine learning agent, we have AI that highlights areas of the dataset it believes are normal or abnormal, essentially pointing to where you should train the agent.

We also have AI that focuses on alert grouping, so when it sees a start up, it groups all the alerts associated with that start up. Or if there's an oil starvation event driving a bearing failure, it automatically groups those alerts together as well. That gives you much smarter visualizations of the alerting and reduces the burden of multiple alerts that must be addressed. We also use AI to help develop recommendations based on failure modes. Those go into the templates, providing the identified failure mode and the recommended next steps.

When we use machine learning to train our systems, AI is used to make the neural network calculations and handle the "heavy lifting" on the back end. And we have AI applications that help tune the agents. If something happens and the agent needs to be retuned, it will show you where the relevant sets of data are. Industrial AI is really all over our software, and it's quite deep in terms of what it does.



How does AspenTech APM integrate with other systems and workflows? Why is that connection so important?

JE: When you bring new datasets into the software, they can be very different, and there's a lot of mapping to do. We use AspenTech Inmation™ as an interface, which enables us to leverage it as a data hub, so that data is then available to use elsewhere. When we integrate with an EAM (enterprise asset management) system, we need a two way, bidirectional data set. We take information in—like where the asset strategy is, where the key challenges are—and display those on dashboards, and we also push out work order activity and ask for status updates.

With this integration, data flows both ways, and you're creating new data sources as you go. Within this system, you can take the base models, turn them into templates and then scale them. So integration, openness and the ability to template and scale are all essential to making the solution work.

What's the overall benefit companies can realize by taking this holistic approach to APM?

JE: When you take a holistic approach—focusing on the systems, the operations and the equipment—reliability becomes a business capability that you can manage. What's fantastic about this approach is the ability to do it at scale. We start with an assessment, and from that we build a small operational model, which becomes an indication of how they can see value. Once you can see that indication of value, you can put a program together to deploy it into more areas.

This is a solution that can be applied to thousands of assets, so the impact you create really becomes scalable. Something you previously did on 20 assets, you can now do on 20,000, and that's where you create a transformational impact for your business.

Learn more about how you can achieve best-in-class reliability at aspentech.com/apm.



About Aspen Technology

Aspen Technology, now part of Emerson, is a global software leader helping industries at the forefront of the world's dual challenge meet the increasing demand for resources from a rapidly growing population in a profitable and sustainable manner. AspenTech solutions address complex environments where it is critical to optimize the asset design, operation and maintenance lifecycle. Through our unique combination of deep domain expertise and innovation, customers in asset-intensive industries can run their assets safer, greener, longer and faster to improve their operational excellence.

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