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CHEMICALS

Jack Puryear,
Digital Manufacturing Engineer

Peyton Piesco,
Digital Manufacturing Engineer

Machine Learning Models:
Green is Good

Using terrible models to save millions of dollars via integrated process control and the difference maker of cross-functionality

EASTMAN | SeeQ®

Introductions

Jack Puryear
Digital Manufacturing Engineer

Peyton Piesco
Digital Manufacturing Engineer

Agenda

History
- What had we tried before?

Problem
- What were we trying to solve today?

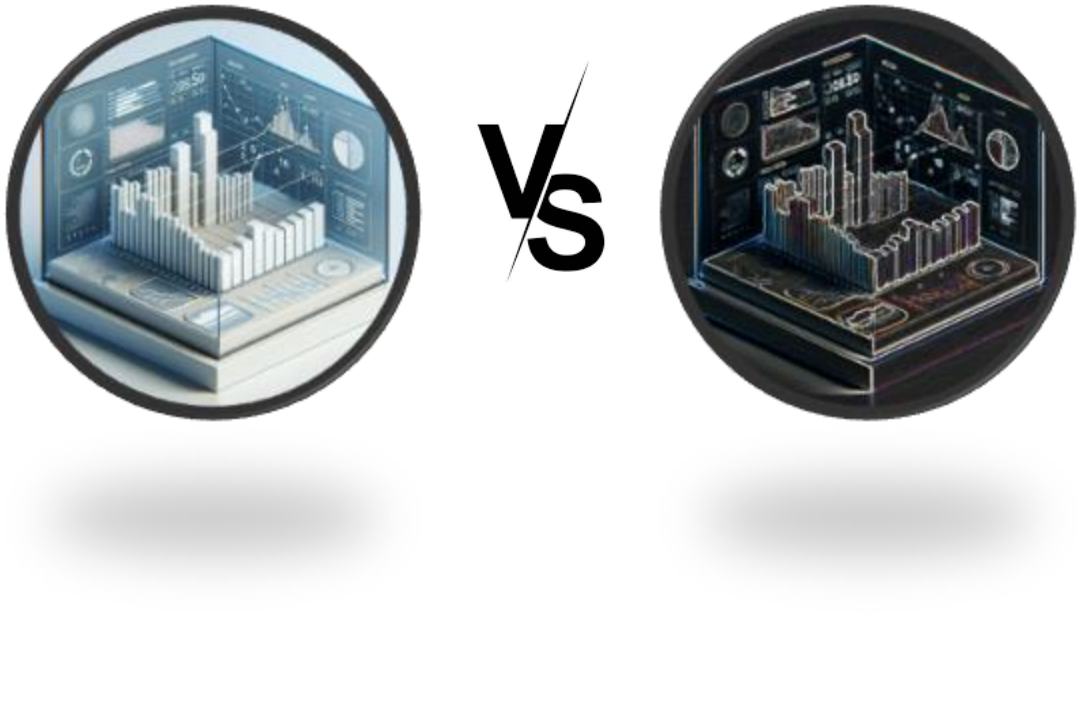
Solution
- How did ML fix it?

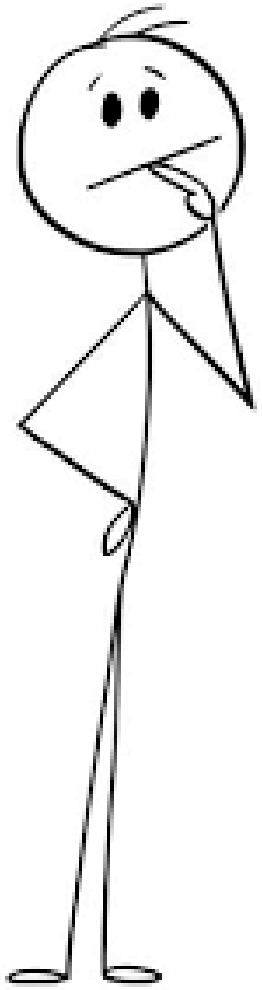
Communication
- How did Seeq fit in?

The Premise:

More time Differentiating,

less time Remaking





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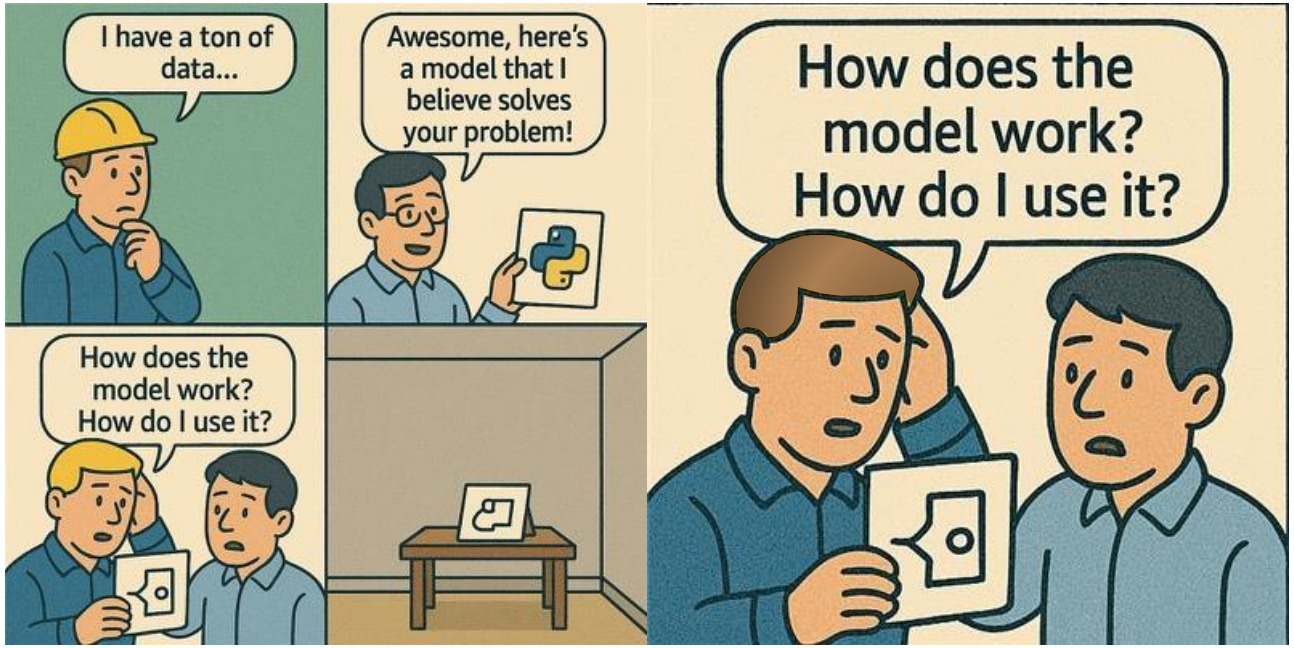
We Tried AI Before...

Mfg

[redacted]

ML



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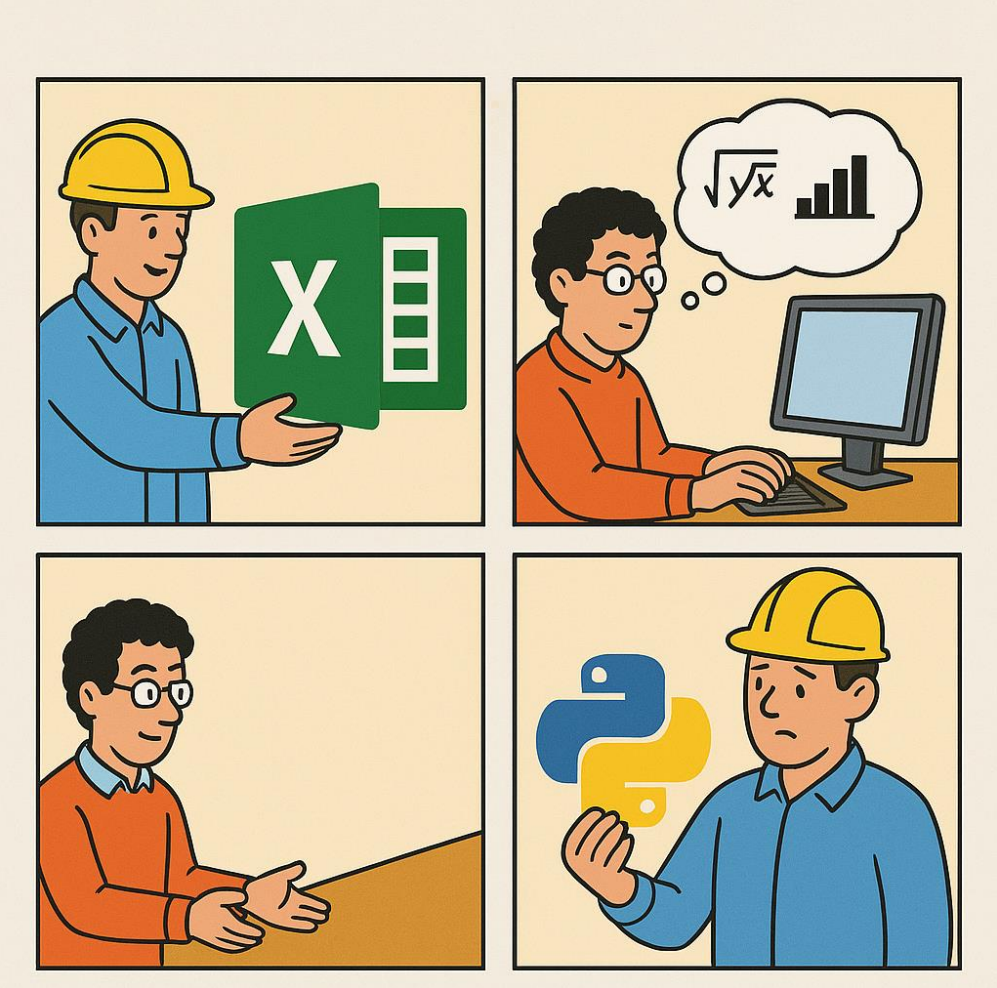
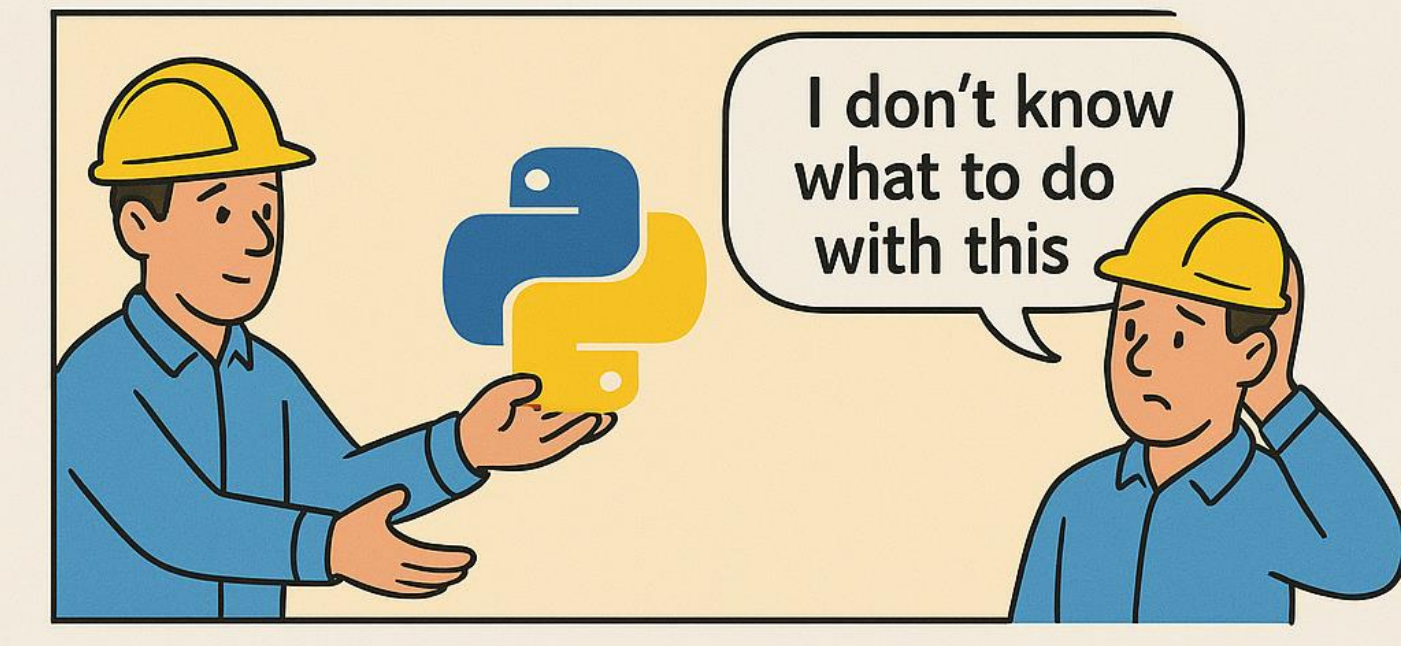
No Natural Collaboration Space





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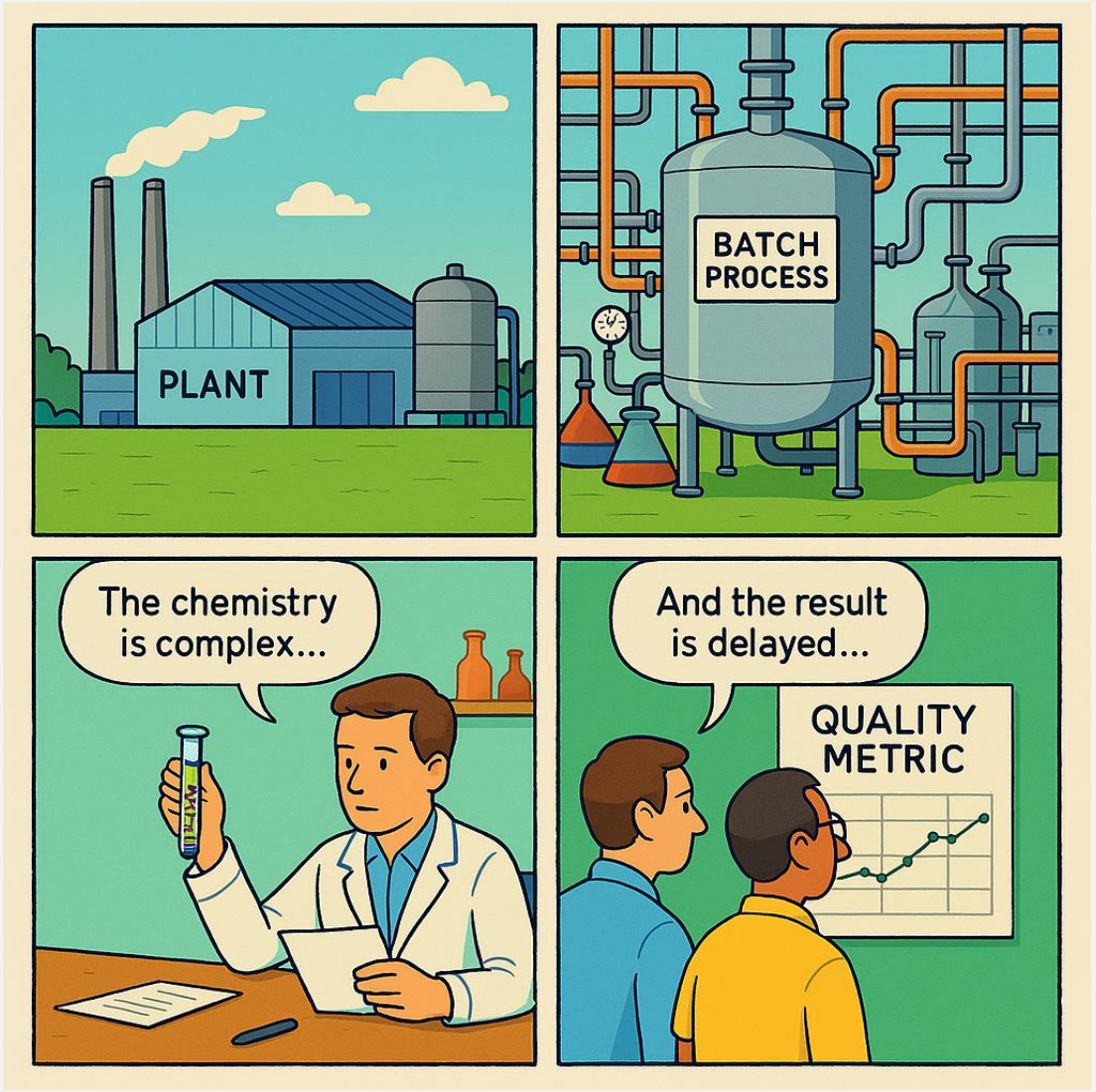
The Context: Complex Chemistry, Large Lag Times, Untrustworthy Tests



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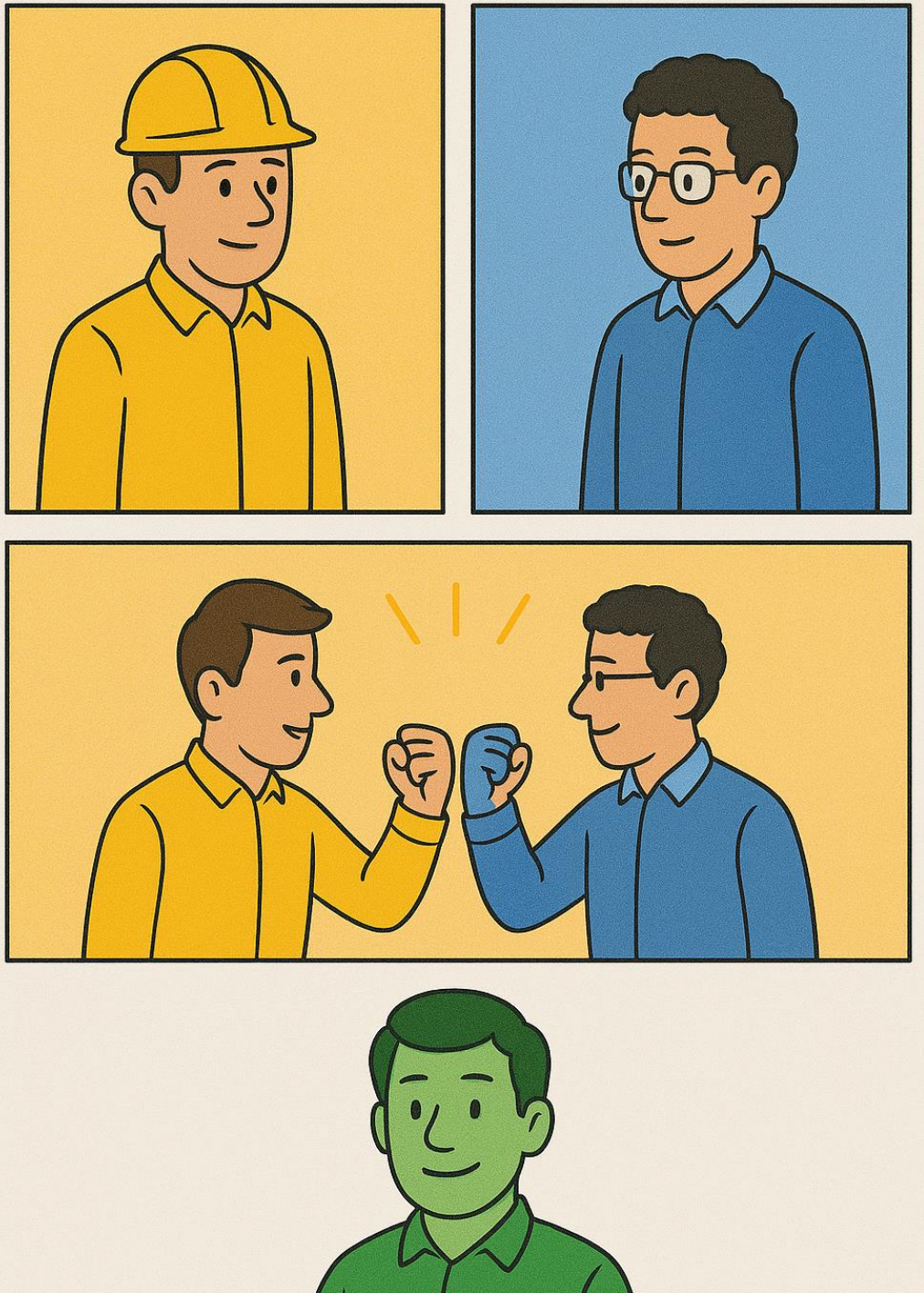
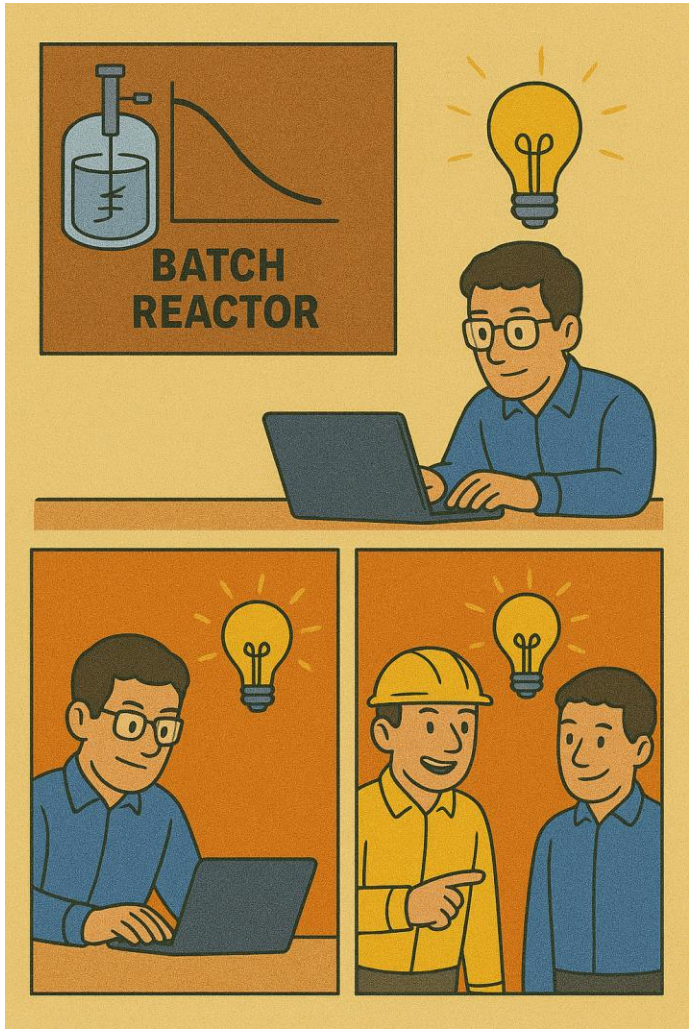
The Beginnings of Success:

Engineer...
Data Scientist...
Hybrid?!



The Power of Cross-Training

Innovation Occurs at the **Intersection** of Disciplines



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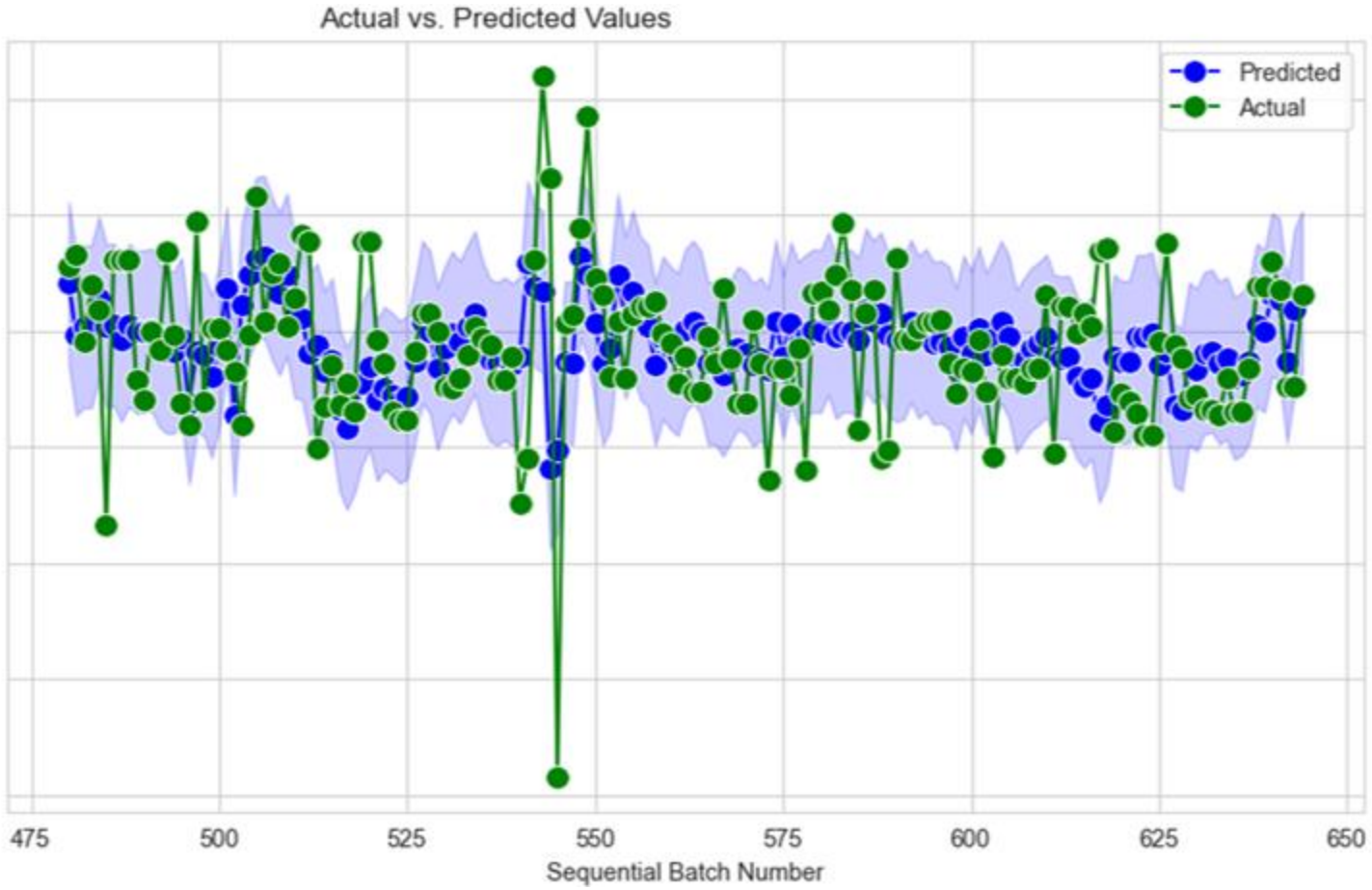
An *Epically* Useful "Terrible" Model

"0.13 r^2? Yeah, well previously we had 0 r^2 so…"



Hang on!

That isn't Seeq…??

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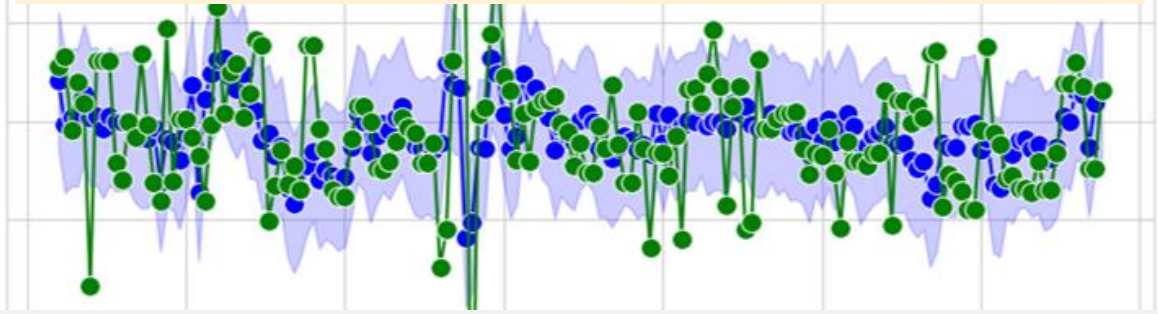
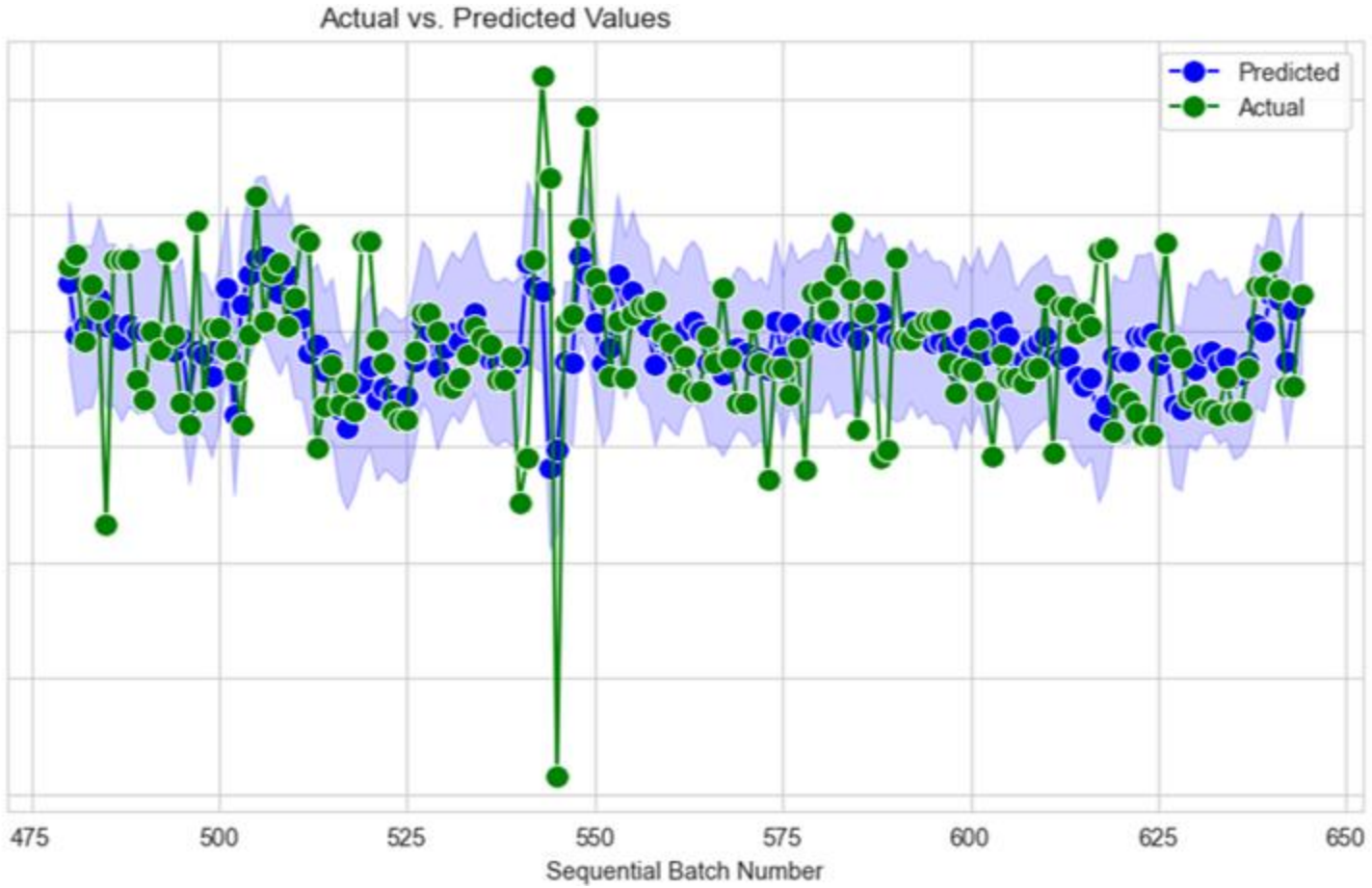
Innovation is pointless if you can’t convince people to do it



An *Epically* Useful "Terrible" Model

Below is happening 1.5-2 days prior to the final spec test…



Led to a ~30% reduction in end of line final quality metric variability

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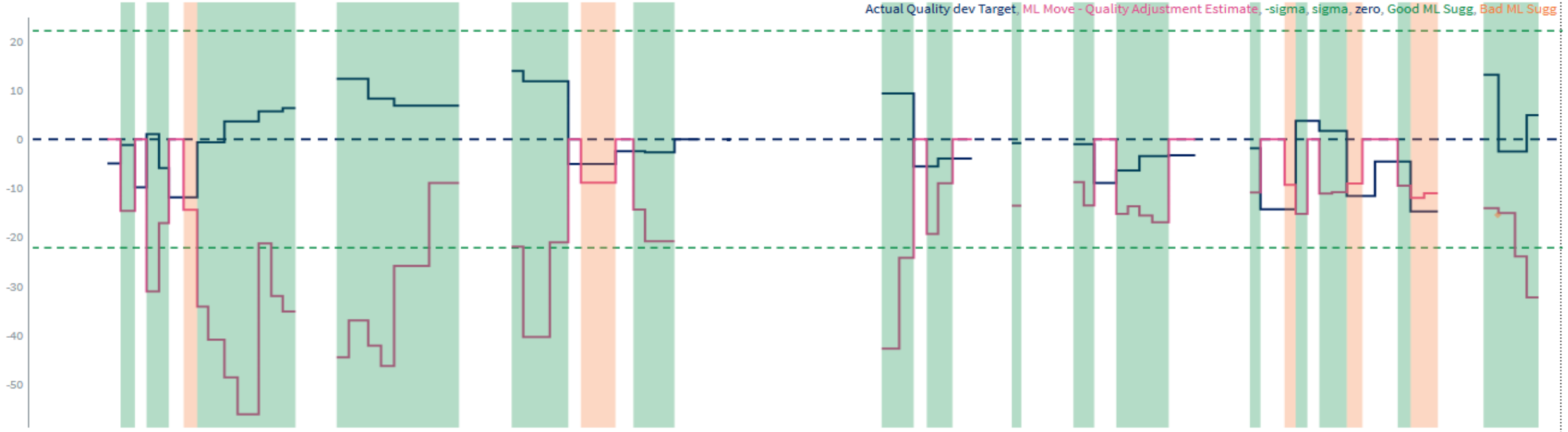
Getting *Leadership* Excited

Before Seeq

	Strat	Overall Score	High Dev Response Frequency	High Dev Good Response Frequency	High Dev Avg Mag	Med Dev Response Frequency	Med Dev Good Response Frequency	Med Dev Avg Mag	Small Dev Response Frequency	Small Dev Avg Mag
0	Optimized Strat	6.441718	35.555556	100.0	123.129427	10.655738	92.307692	76.548307	3.773585	68.896702

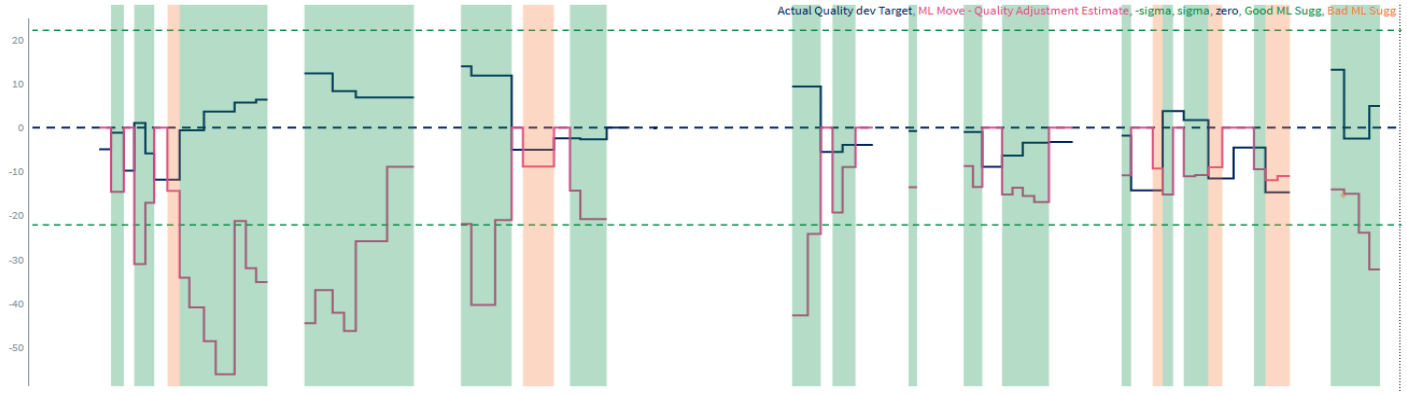
After Seeq – Reactor ML Adjustments vs Quality



Effortless Visuals *in the Hands of Experts* → More Differentiation

Model Health Monitoring At a Glance

- Dozens of reactors
- Many Distinct Lines
- Many Products



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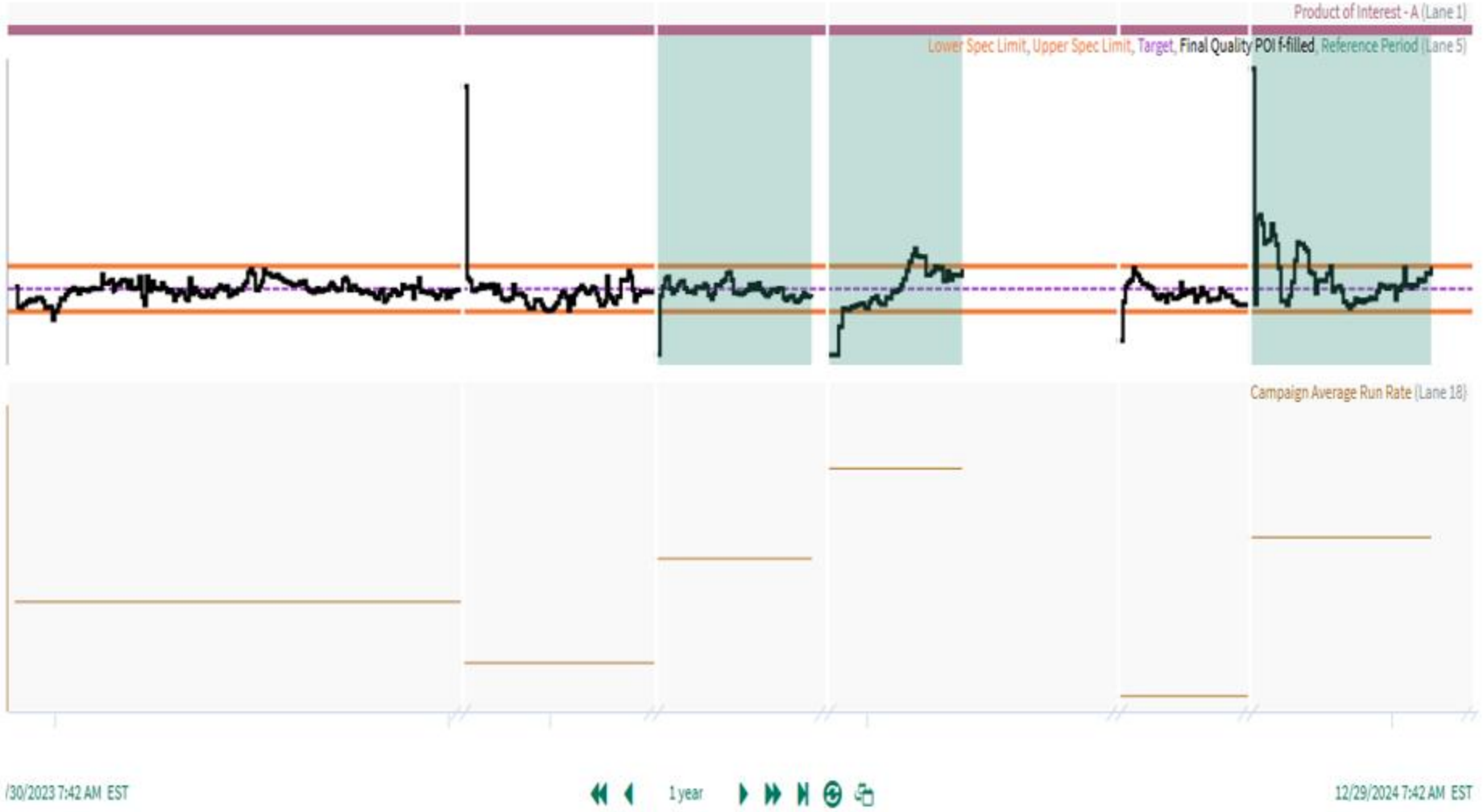
Effortless Visuals *in the Hands of Experts* → More Differentiation

End of Line Real Value Tracking Easy

- Context specific comparisons
  - Run Rate?
  - External Conditions?
  - Etc…!



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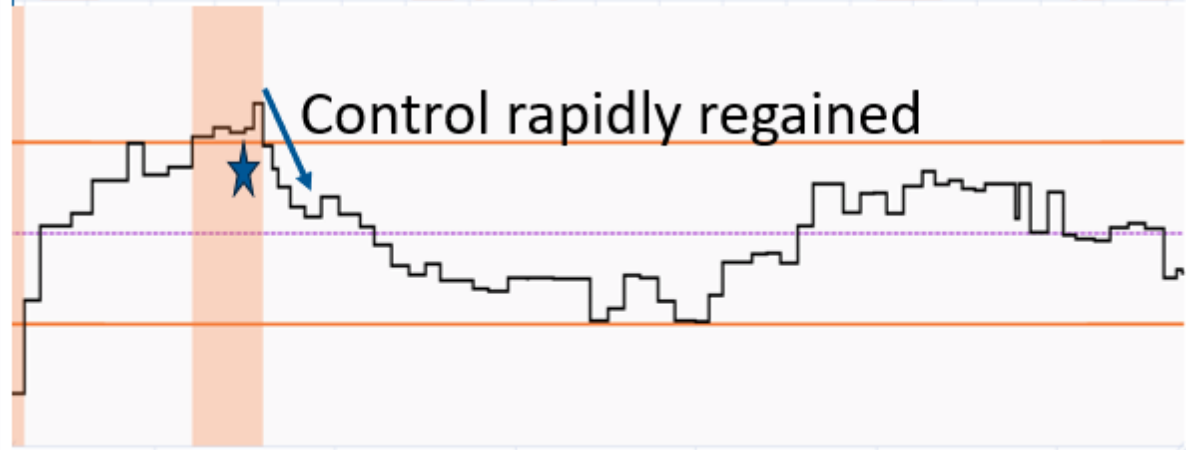
The Power of Rear-View → Proactive Control

Rearview Control

Conservative Proactive Control



Proactive Control

Natural Collaboration Avenue!

Cross-Training is easier and faster with Seeq…

Mfg

ML

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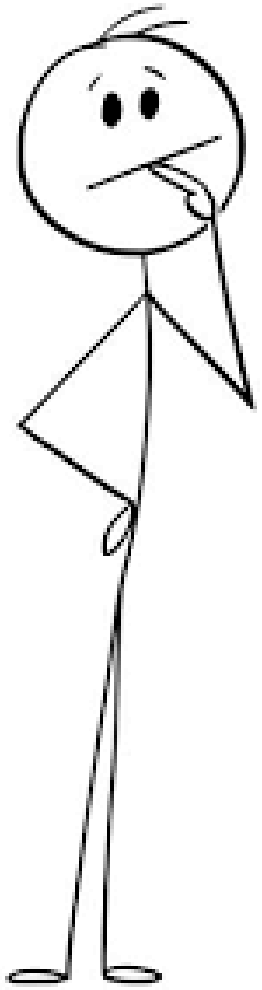
The Premise: More time Differentiating, less time Remaking

VS



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Effortless Visuals *in the Hands of Experts* → More Differentiation

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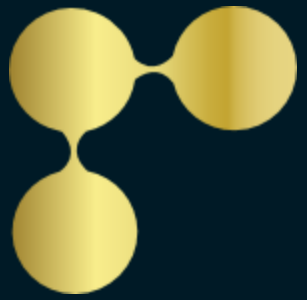
Thank You



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