Project Title: Process Capability and Launch Readiness Copilot
Course: EPD 522
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Today I want to walk through how my Agentic AI workflow supports process capability and launch readiness decisions at North River Diagnostics. The main idea behind this system is to help engineers and managers make sense of process data more quickly and consistently, without taking decision making out of human hands. This is meant to support engineers, not replace them.

For the demo, I use the Hot Metal Delivery Times datasets. I focus on two situations that are very realistic in manufacturing. In the first case, the process behavior is stable, but the specification limits are set up incorrectly. In the second case, the process is unstable and not capable. These examples are important because they show how the system handles edge cases and avoids giving misleading answers.

The workflow always starts by looking at process behavior. This step matters because capability numbers only mean something if the process is stable. If the process is not in control, the system clearly says that capability conclusions should not be trusted.

Once behavior is evaluated, the system calculates standard capability metrics like Cp and Cpk using statistical tools. These calculations are handled outside the language model, which helps ensure the numbers are correct and repeatable. The language model only comes in after the analysis is done.

At that point, the results are passed to an Aggregator Agent that explains what the numbers mean using NRD's internal capability guidelines. The agent does not adjust or invent values. Instead, it focuses on interpretation, context, and clear communication.

In the stable dataset example, the system correctly recognizes that the process behavior is stable. However, it also points out that the capability results are not valid because the specification limits are misconfigured. Rather than presenting misleading metrics, the report explains why the results cannot be trusted and what needs to be fixed before making a decision.

The executive summary takes all of this and presents it in a short, easy to read format for management. It clearly states whether the process is stable, whether the capability results are reliable, and what the recommended next steps are. This helps leadership understand the situation without digging into technical details.

In the unstable dataset example, the system identifies out of control behavior and clearly states that capability conclusions should be deferred. This shows that the workflow prioritizes correctness and transparency over producing optimistic results.

From a business perspective, this directly addresses a real pain point at NRD. Engineers spend a lot of time analyzing data and writing reports, and interpretations can vary from person to person. This system produces consistent, structured outputs that engineers can review, while giving leadership clearer and more reliable summaries.

I will wrap up by saying that this system is designed to make engineers more effective, not to automate decisions. It improves speed and consistency while keeping human judgment at the center. This pilot shows a practical and responsible way to use Agentic AI to support launch readiness decisions at North River Diagnostics.