The Write-Audit-Publish Pattern via Apache Iceberg

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Subsurface Live 2022

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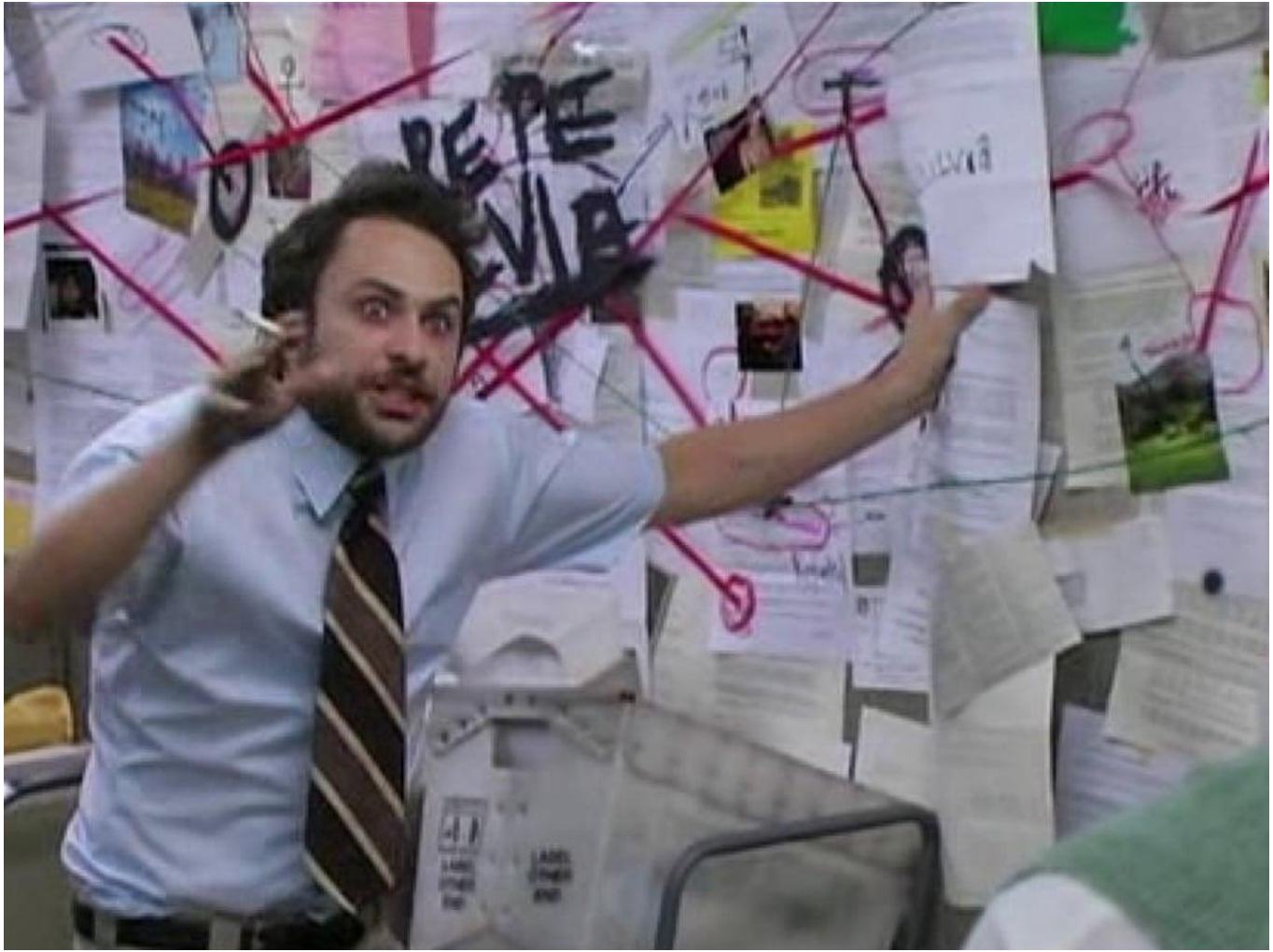
How can you instill trust in your data?

Write your data to production and leave it to your consumers to run validations?

Write the data somewhere else first and make sure it looks good before rewriting it to production?

Generate data quality metrics as part of your pipeline and offer them as a reference?



Apache Iceberg Integrated Audits

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What is Apache Iceberg?

“Iceberg is a high-performance format for huge analytic tables. Iceberg brings the reliability and simplicity of SQL tables to big data, while making it possible for engines like Spark, Trino, Flink, Presto, and Hive to safely work with the same tables, at the same time.”

- iceberg.apache.org

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Apache Iceberg's Integrated Audits Feature – Overview

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- Once you have confidence in the data, publishing is a simple **metadata-only** operation via a **cherry-pick** operation
- If the data doesn't look good, just forget about it! Iceberg's **snapshot expiration** process will clean it up

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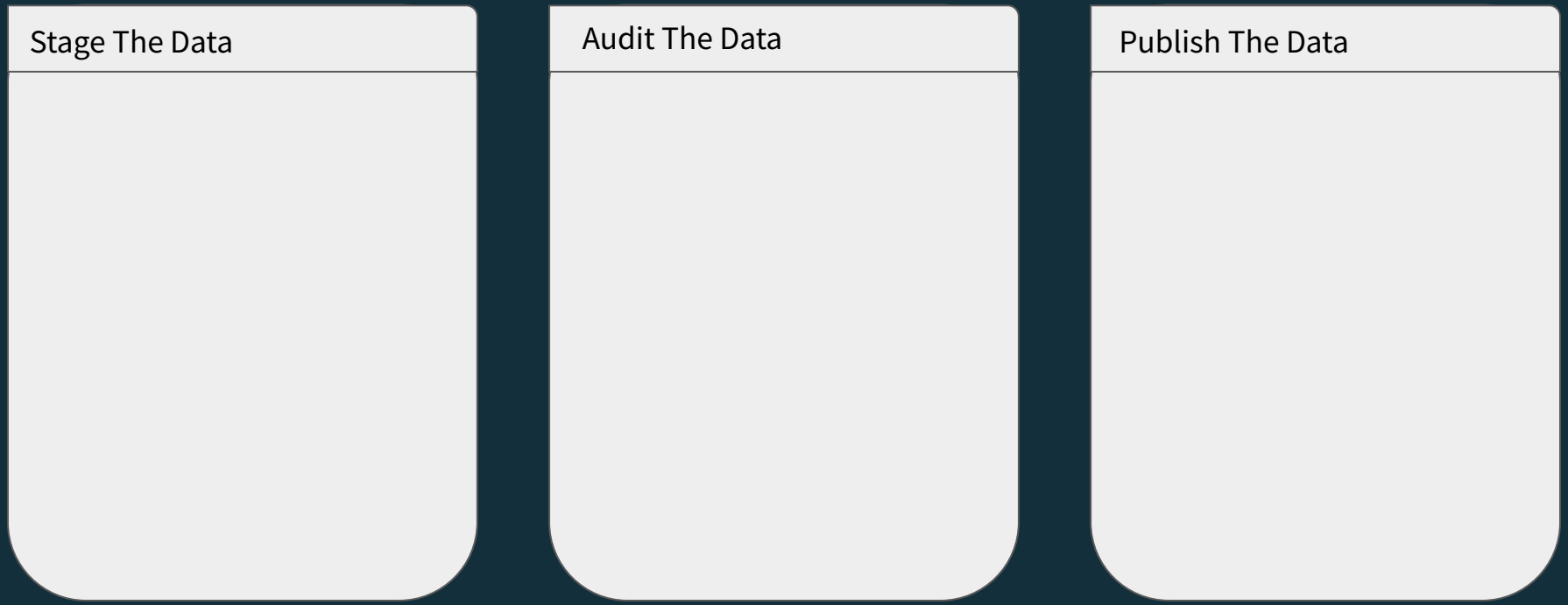
Apache Iceberg's Integrated Audits – More Details



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Stage The Data	Audit The Data	Publish The Data
• Set **write.wap.enabled=true** on your table		

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Audit The Data

- Find the snapshot ID from your **production** table's metadata that's tagged with the same **spark.wap.id**

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- If your audits **fail**, go back to the drawing board.
- If your audits **pass**, execute an Iceberg **cherry-pick** of the snapshot ID. (A metadata only operation).

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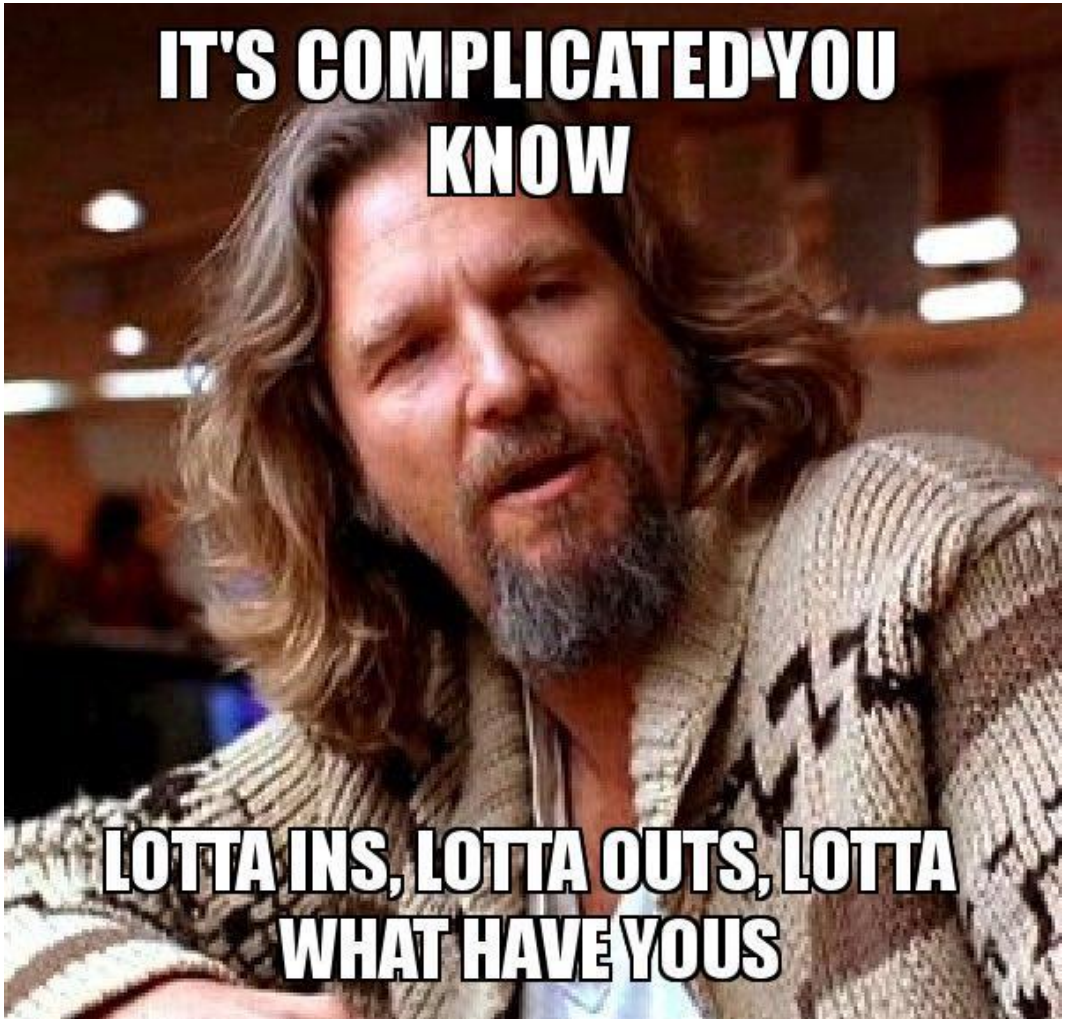
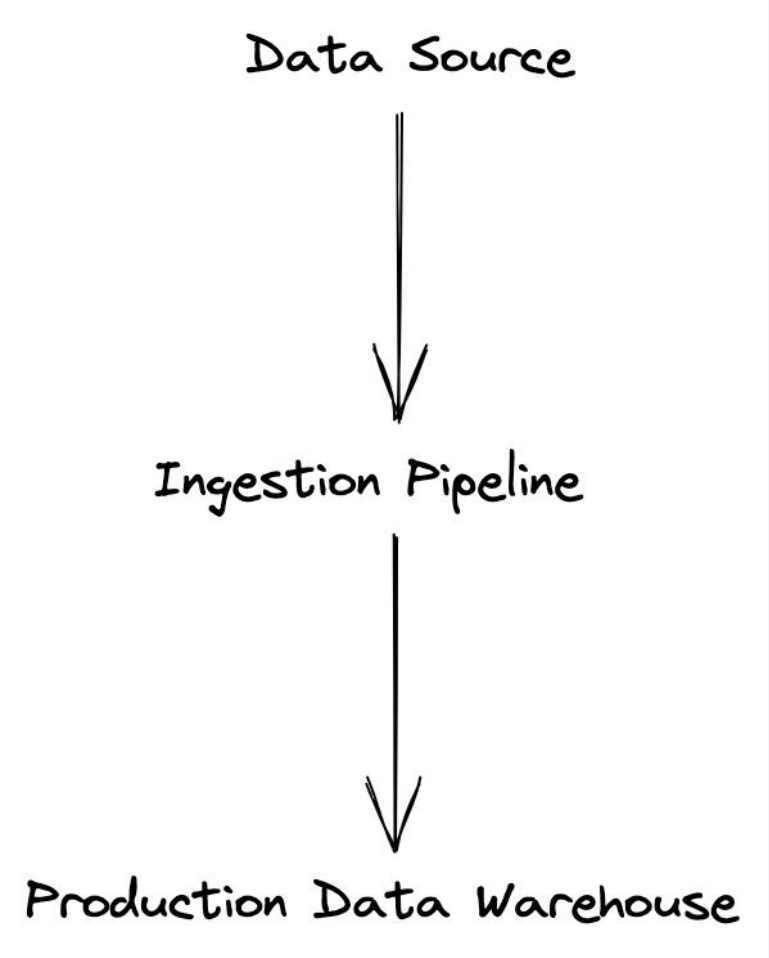

IT'S COMPLICATED YOU KNOW
LOTTA INS, LOTTA OUTS, LOTTA WHAT HAVE YOUS



Iceberg is a Data Quality Enabler

Through the integrated audits feature, Iceberg provides you the flexibility to allow auditing tools to scale with your data warehouse.

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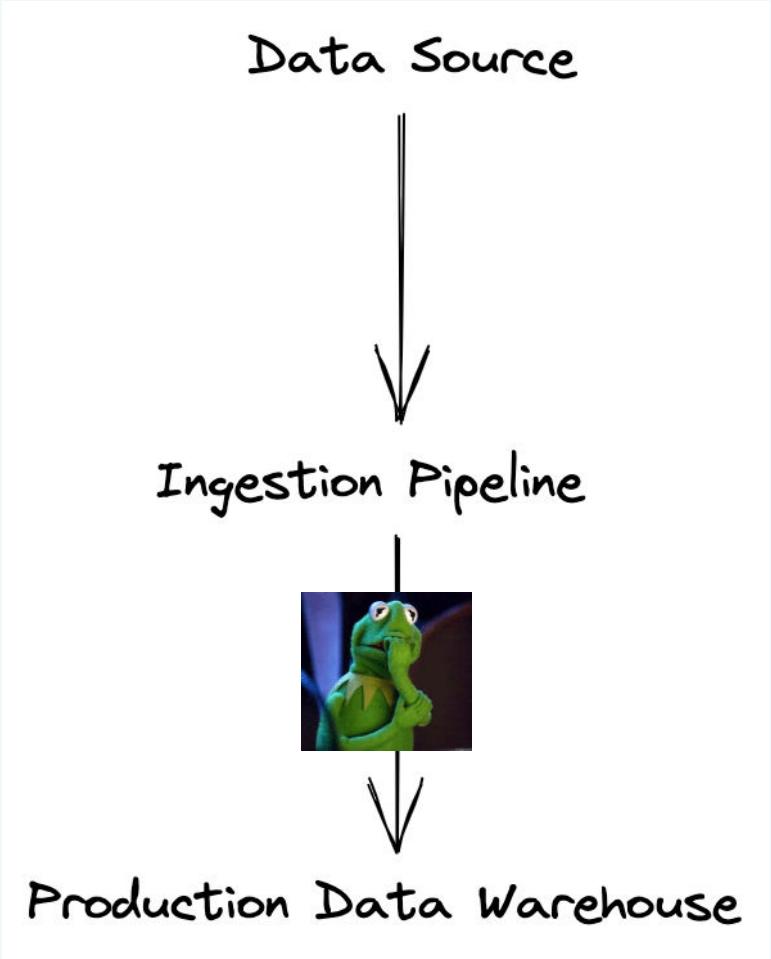

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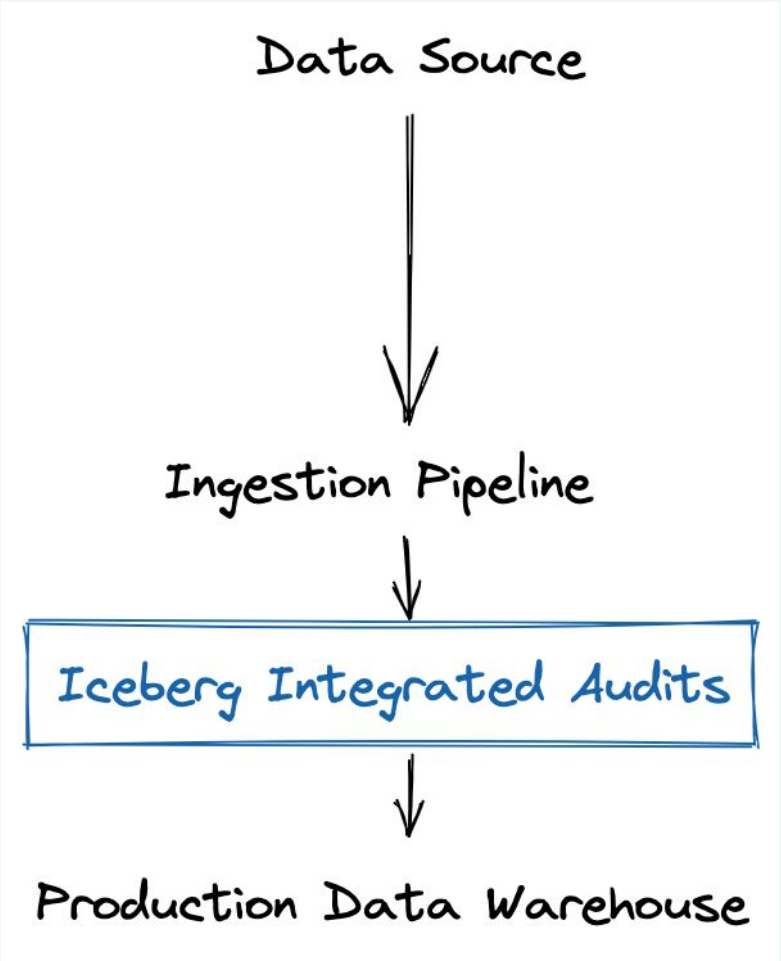

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- …remembering to keep “test” and “prod” schemas synced
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“No, It's all automated now. Come on.”

- Weekend at Bernie’s

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The Actual Audits

…and the role of your orchestration system

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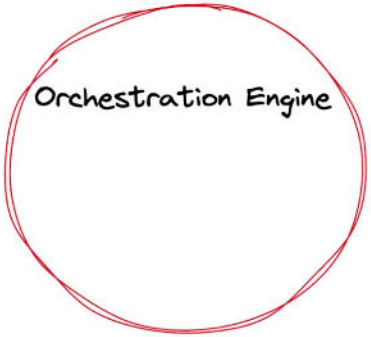
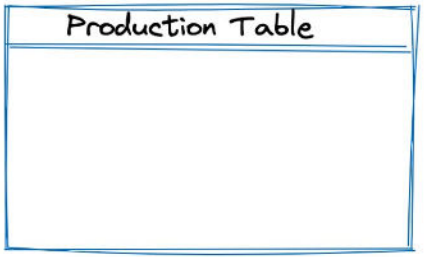
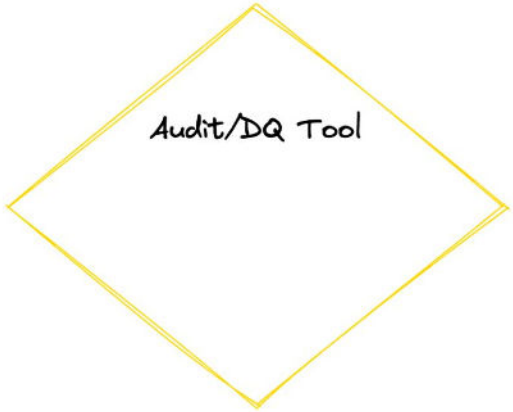
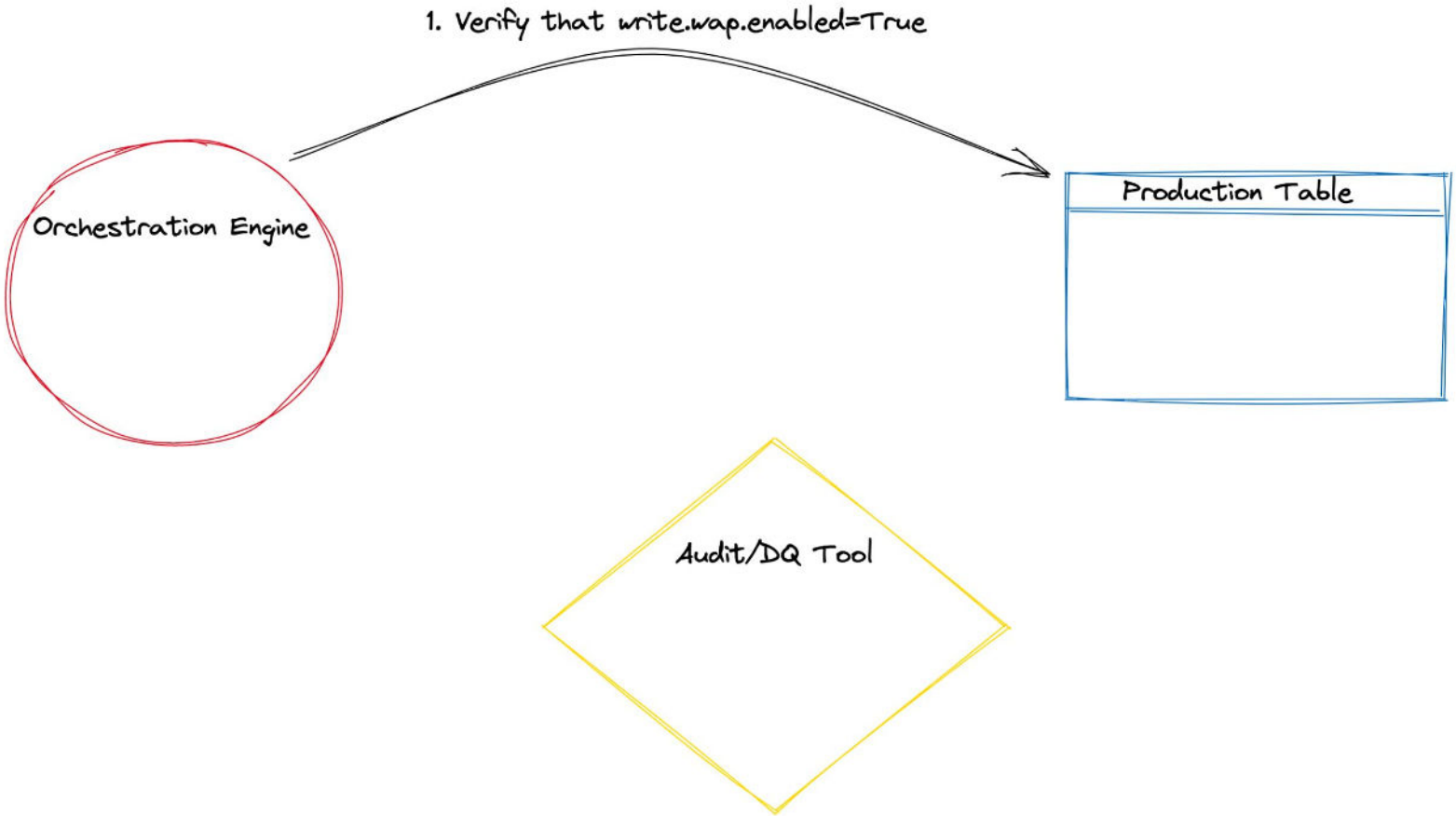

Orchestration Engine


Production Table


Audit/DQ Tool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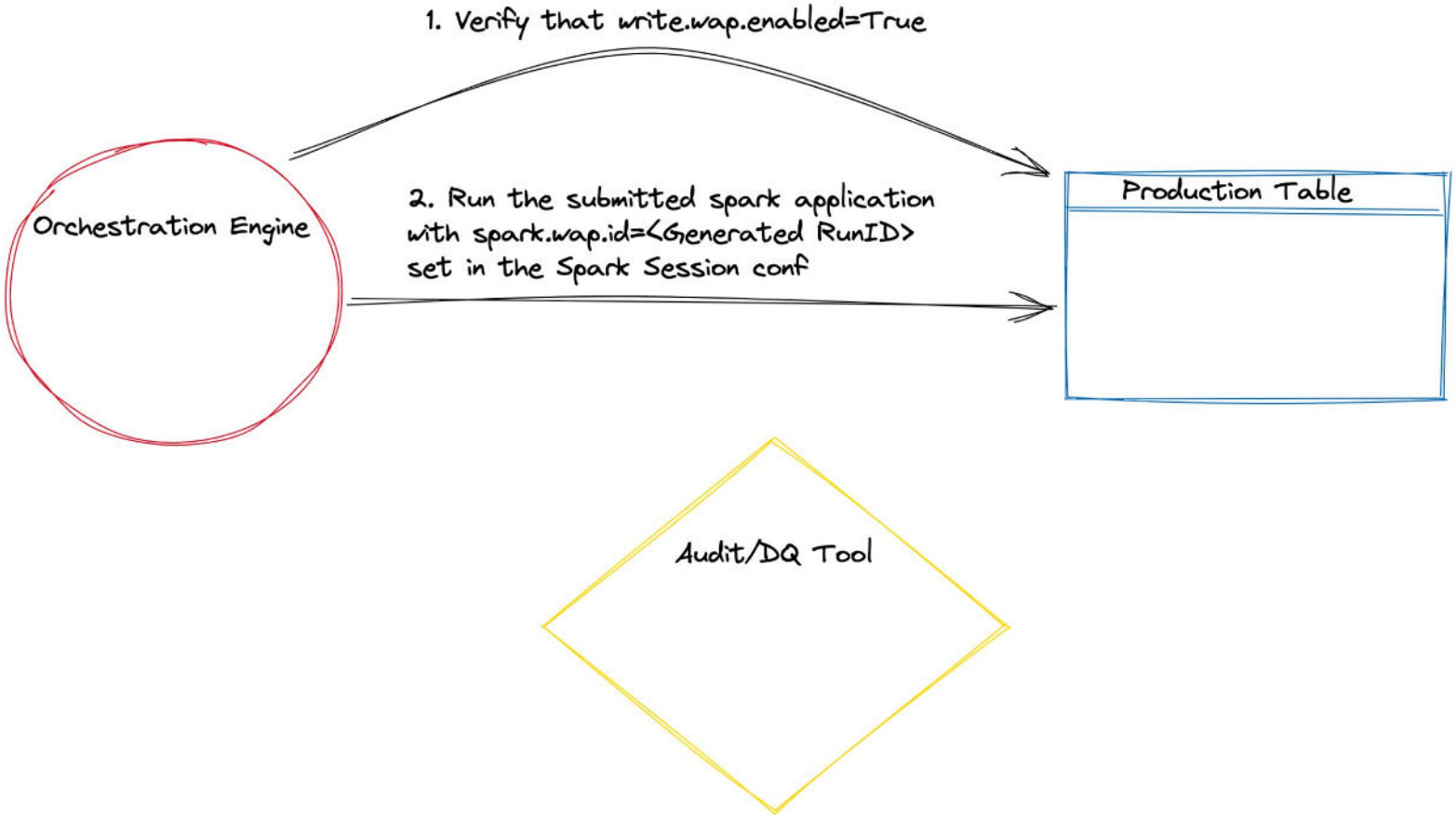
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with spark.wap.id=<Generated RunID>
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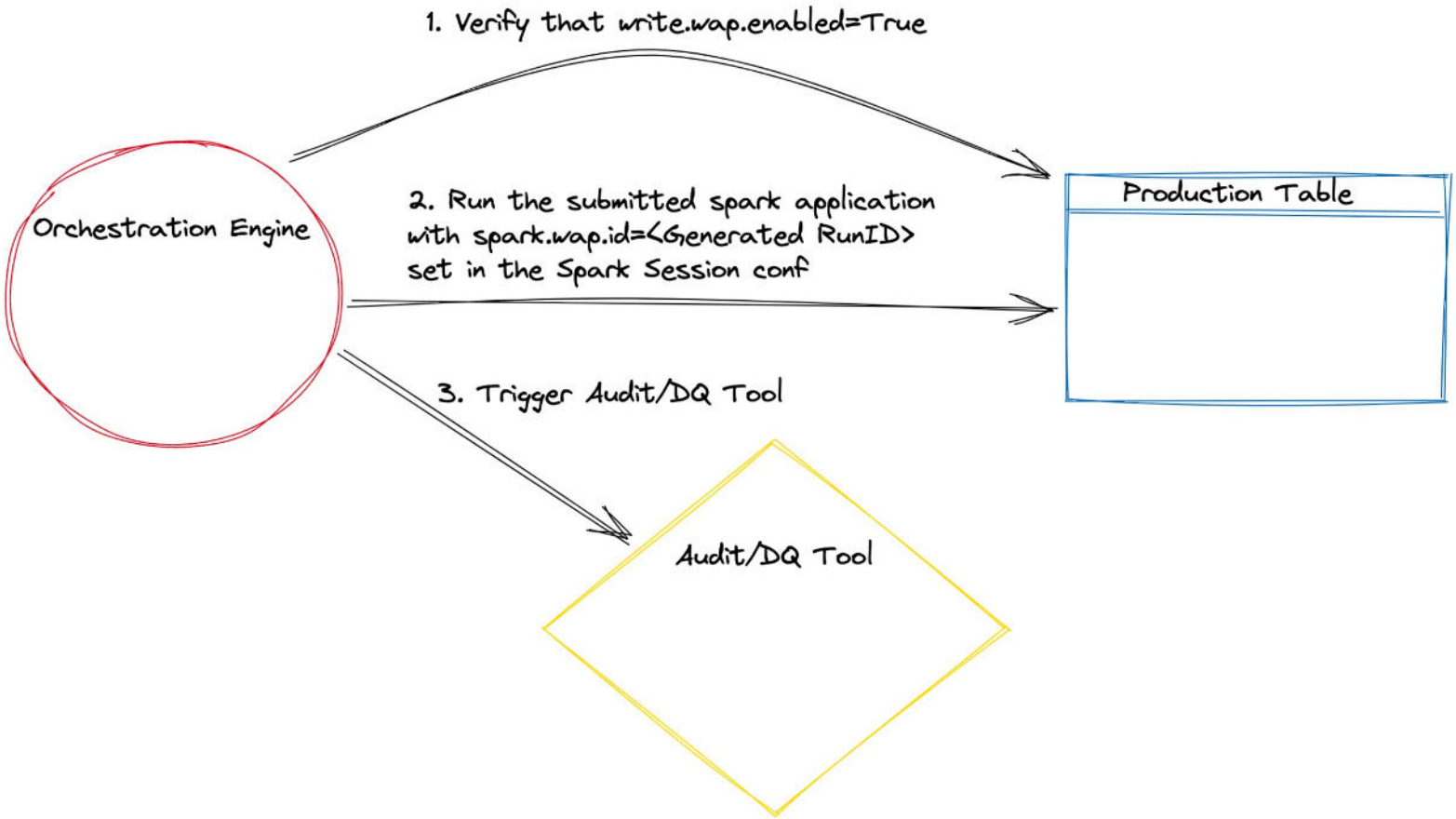
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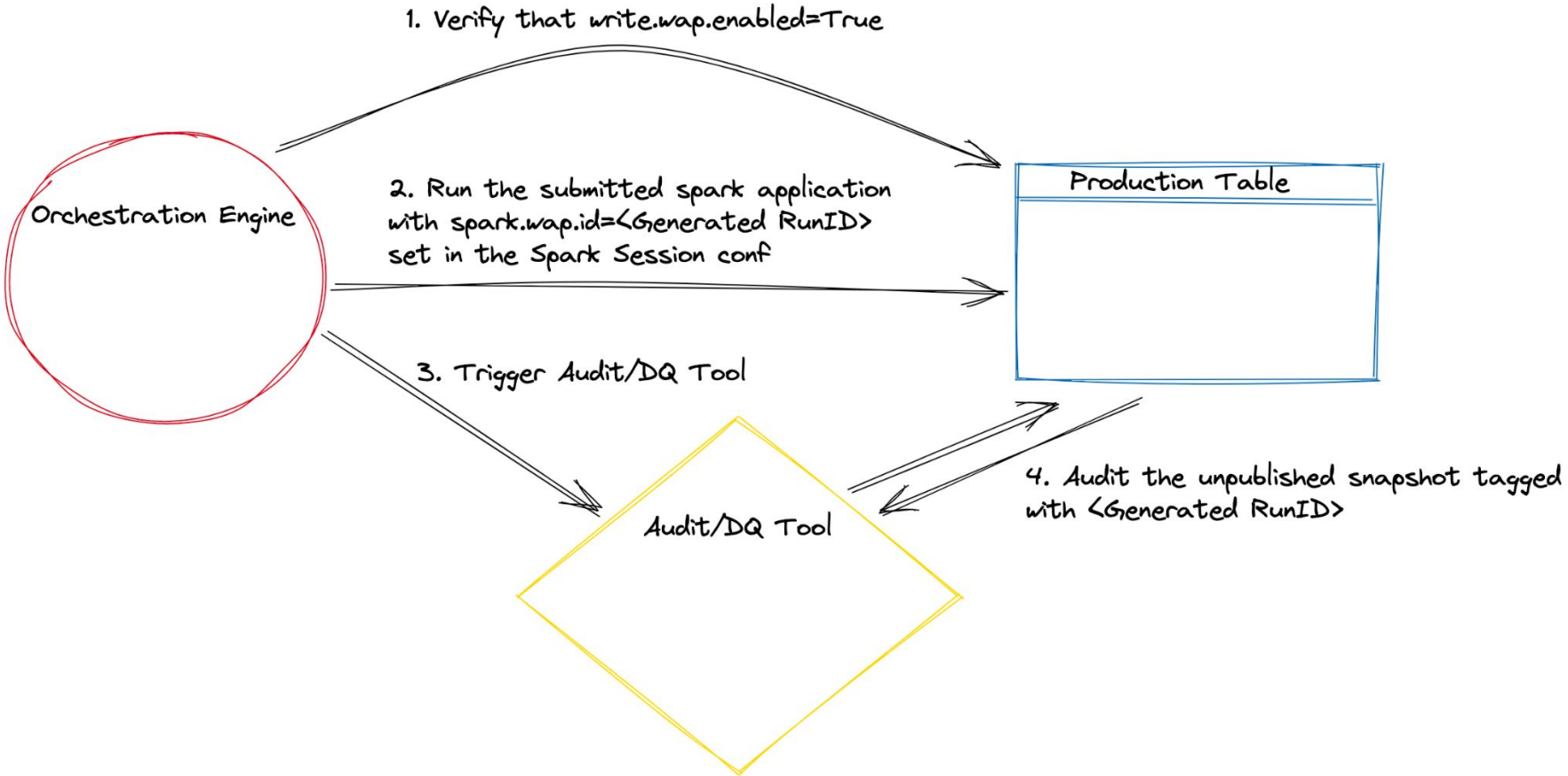
Audit/DQ Tool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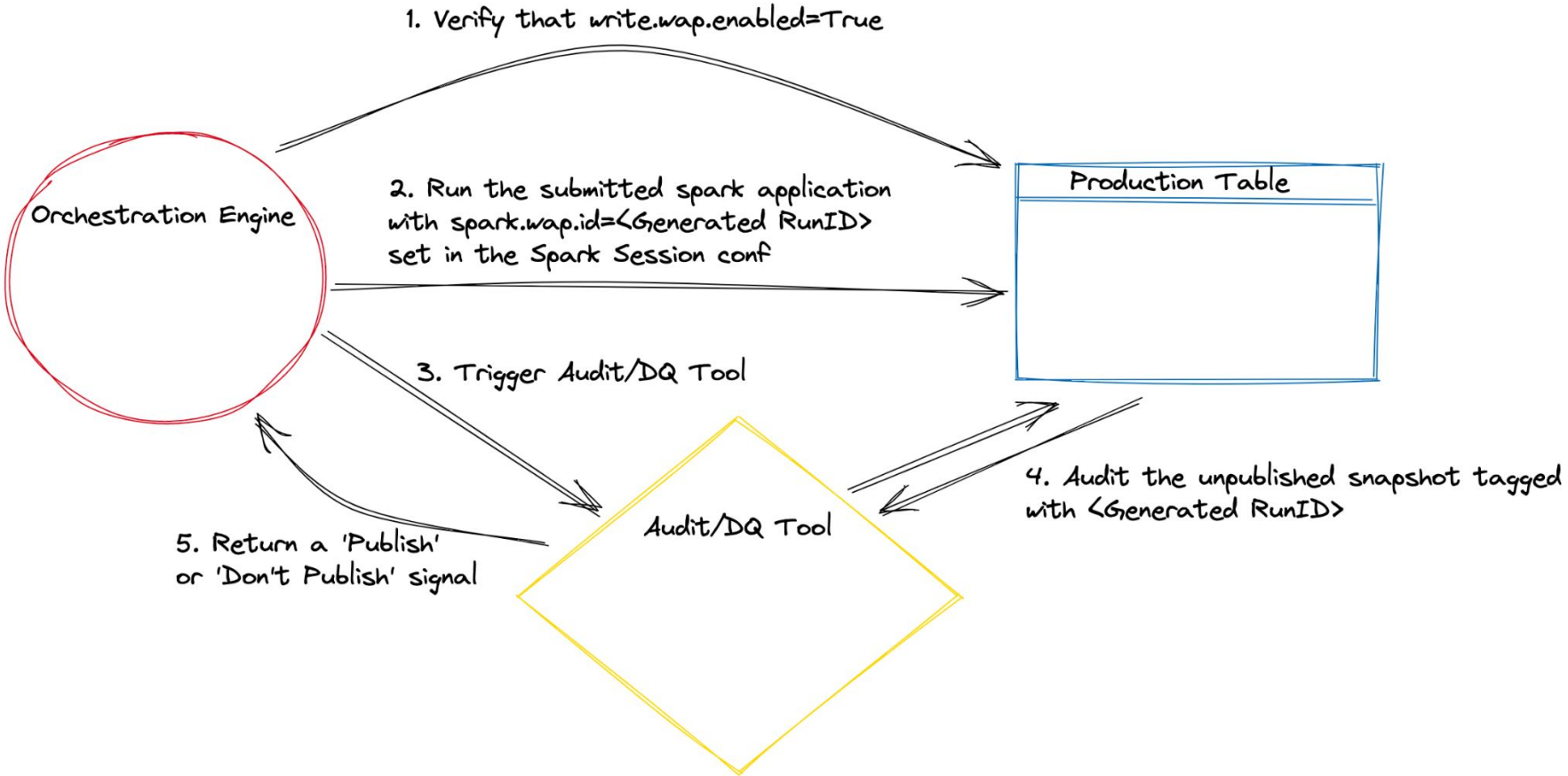
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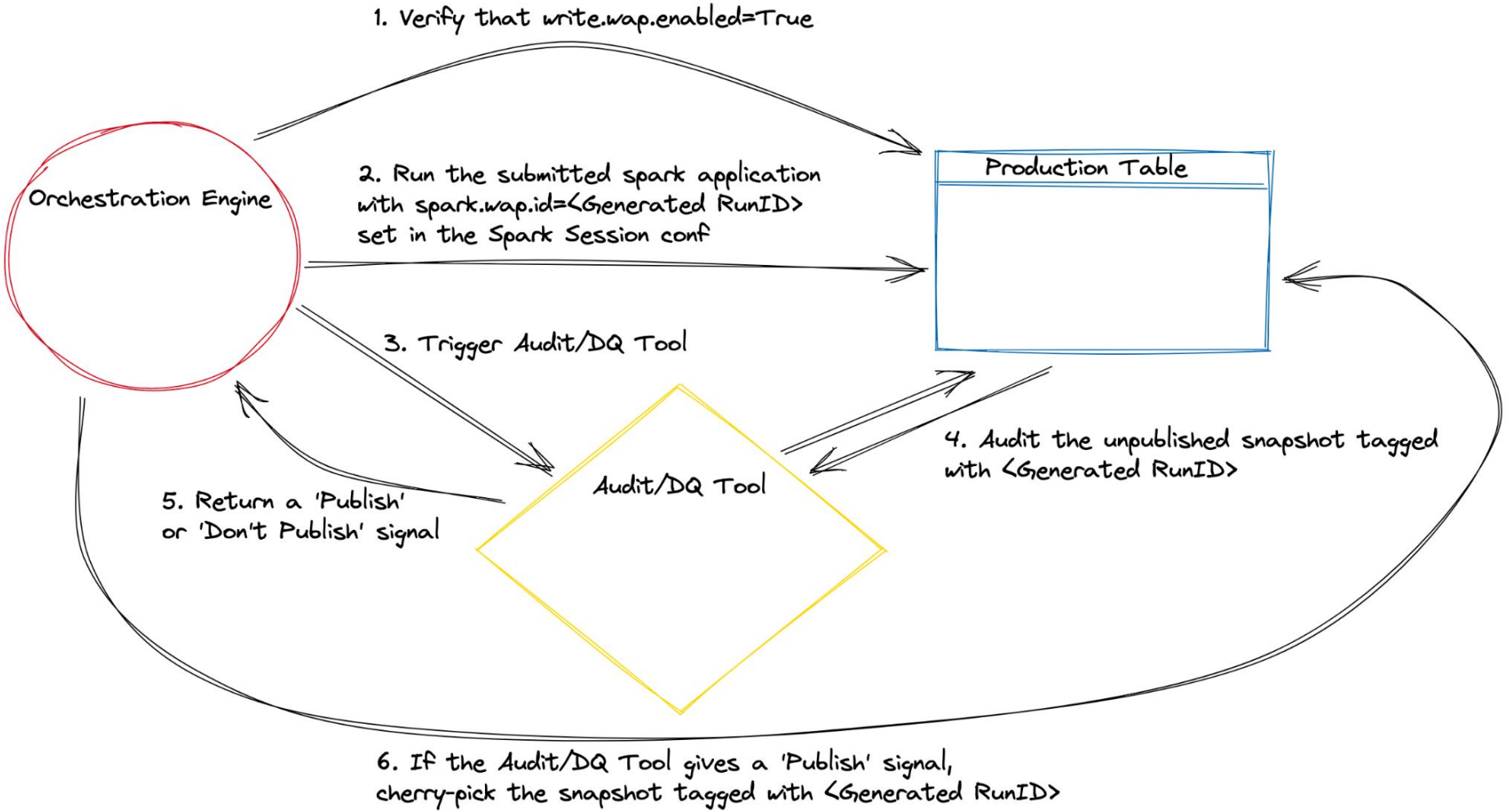
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6. If the Audit/DQ Tool gives a 'Publish' signal,
cherry-pick the snapshot tagged with <Generated RunID>

Thank you

Learn more:
Integrated Audits: Streamlined Data Observability with Apache Iceberg (blog post)
https://tabular.io/blog/integrated-audits

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