AWS re:Invent

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SVS307

Serverless observability end to end

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Agenda

- Why are we here?
- Observability pillars
- What are we building?
- Hands-on workshop

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So,
I built an app



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What could go wrong?



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What could go wrong?



Outages, increased latencies, timeouts, misconfigurations, permission errors, code bugs, someone else's code bugs, and so on

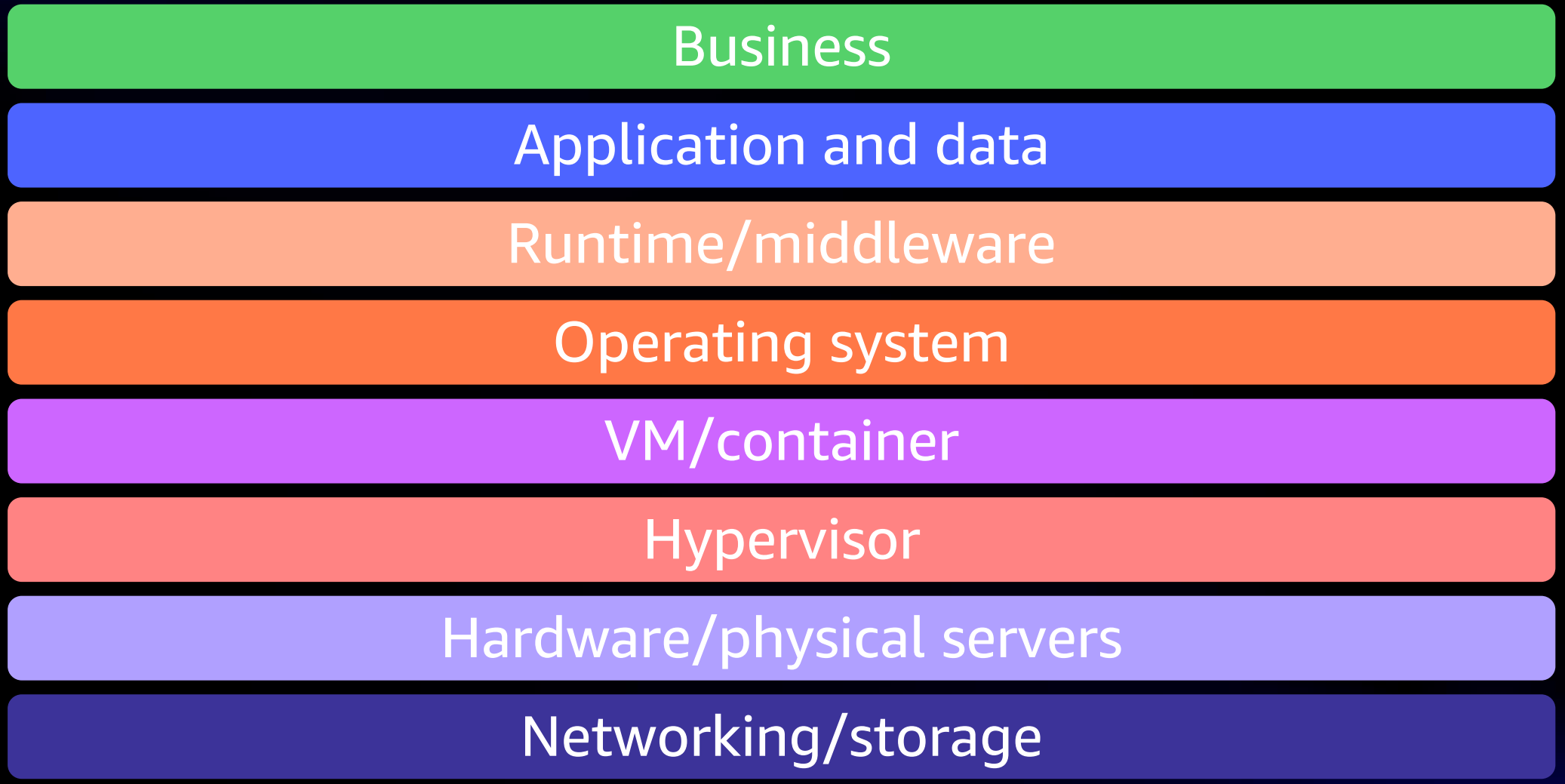
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“Everything fails all the time.”

Dr. Werner Vogels
Amazon CTO

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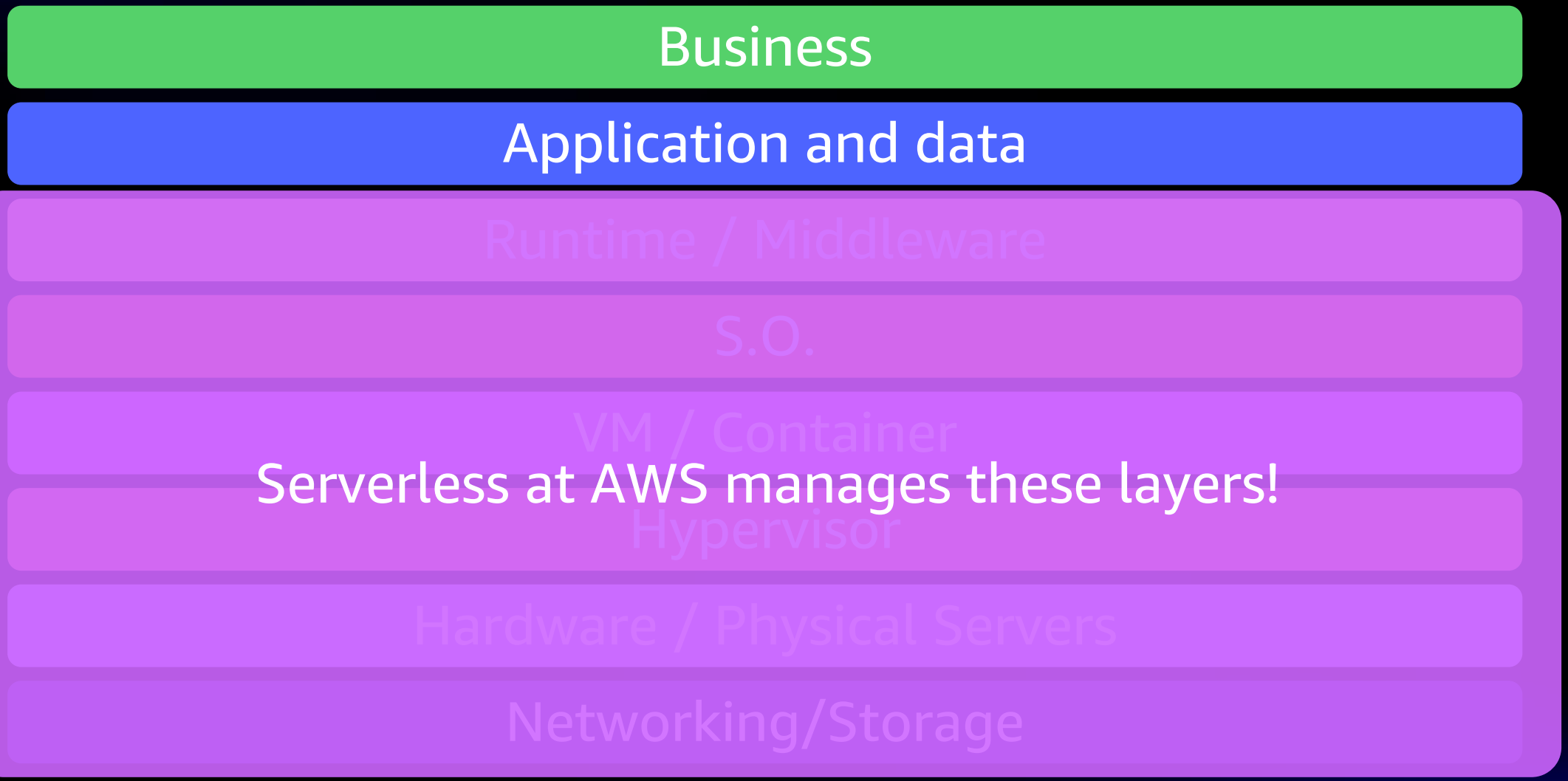
Traditional monitoring layers



aws

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Modern monitoring layers



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Monitoring must evolve



User experience



Ephemeral resources



More devices, services, data



Fast time to market

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More than looking for errors...

Is it behaving as expected?

Duplicated requests? Idempotency

What is the usage?

Most accessed routes/APIs

What is the business impact?

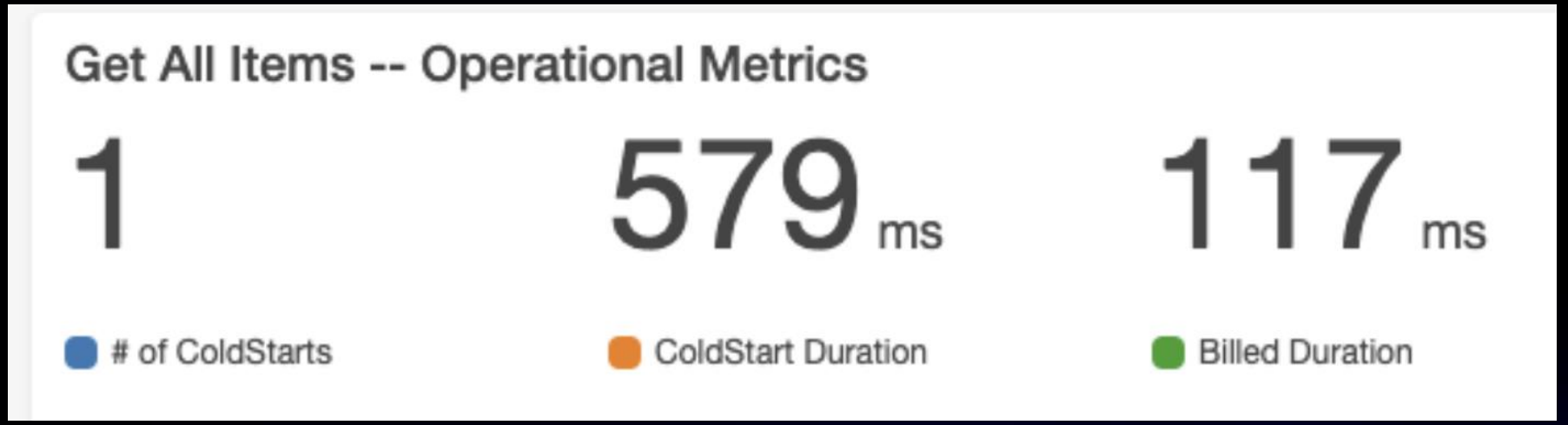
Conversions in a marketing campaign

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Three observability pillars...

- Metrics
- Logs
- Traces

Numeric data measured in time intervals (time series); SLIs (request rate, error rate, duration, CPU%, etc.)



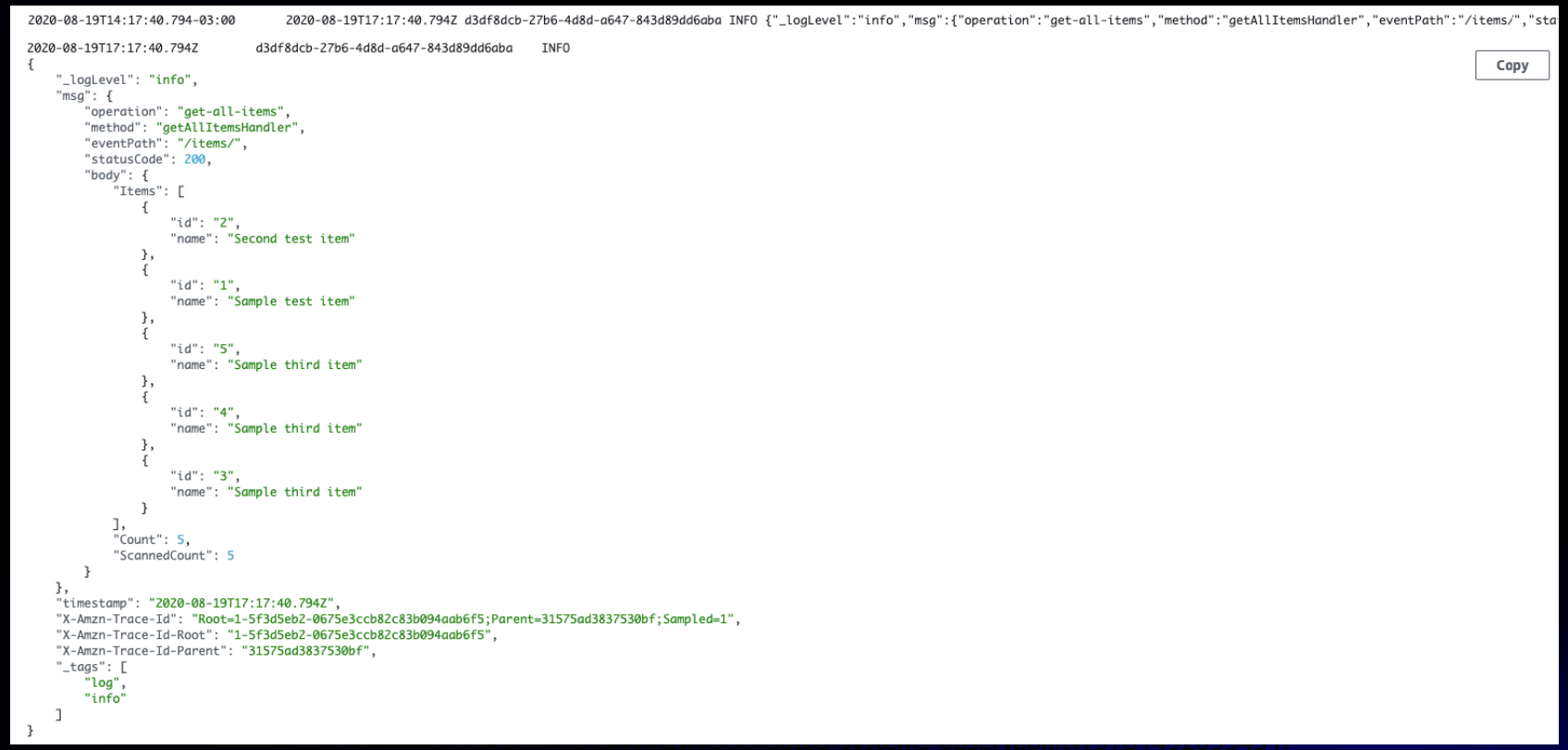
Definition of Observability in Distributed Systems
https://www.oreilly.com/library/view/distributed-systems-observability/9781492033431/

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Three observability pillars...

- Metrics
- Logs
- Traces

Entries with timestamps from events that occurred inside an application or system, like a failure, an error, or a state

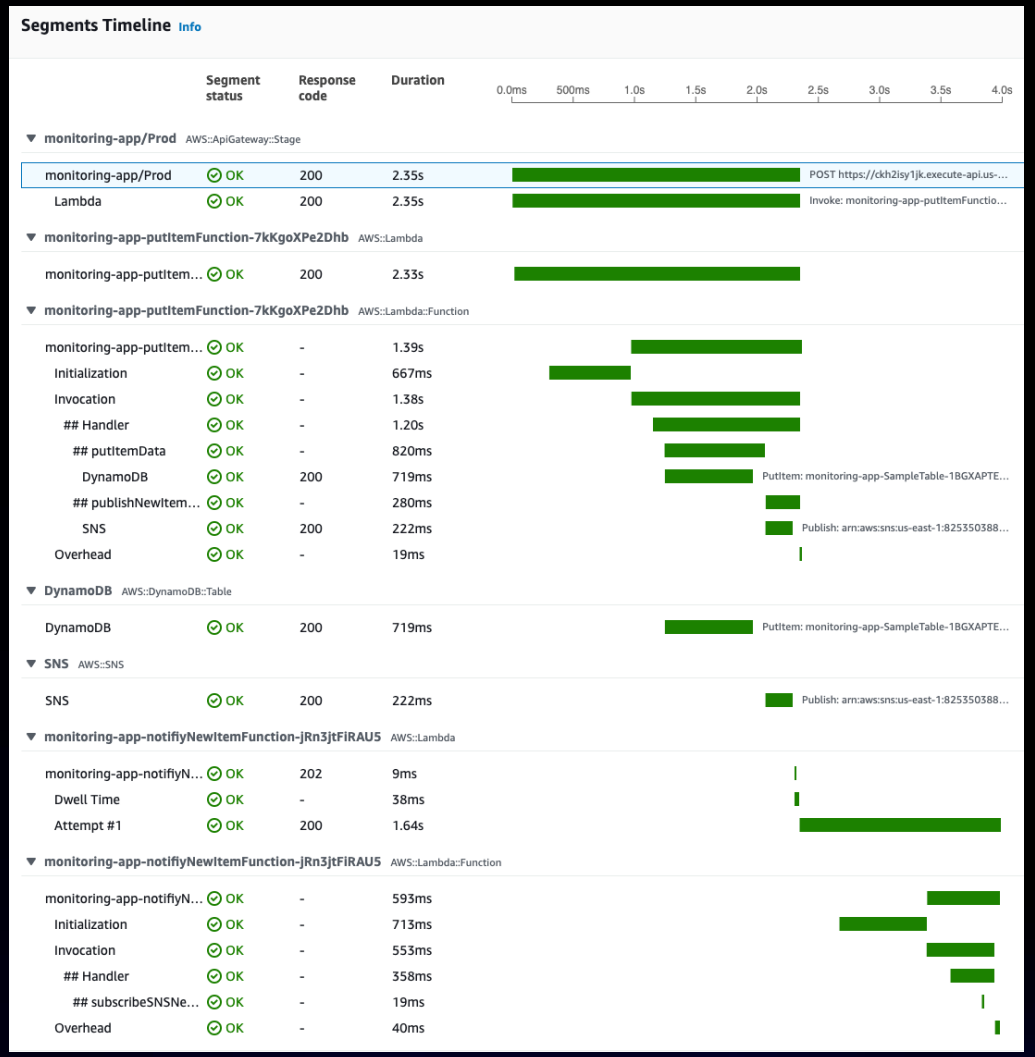


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Three observability pillars...

- Metrics
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- Traces

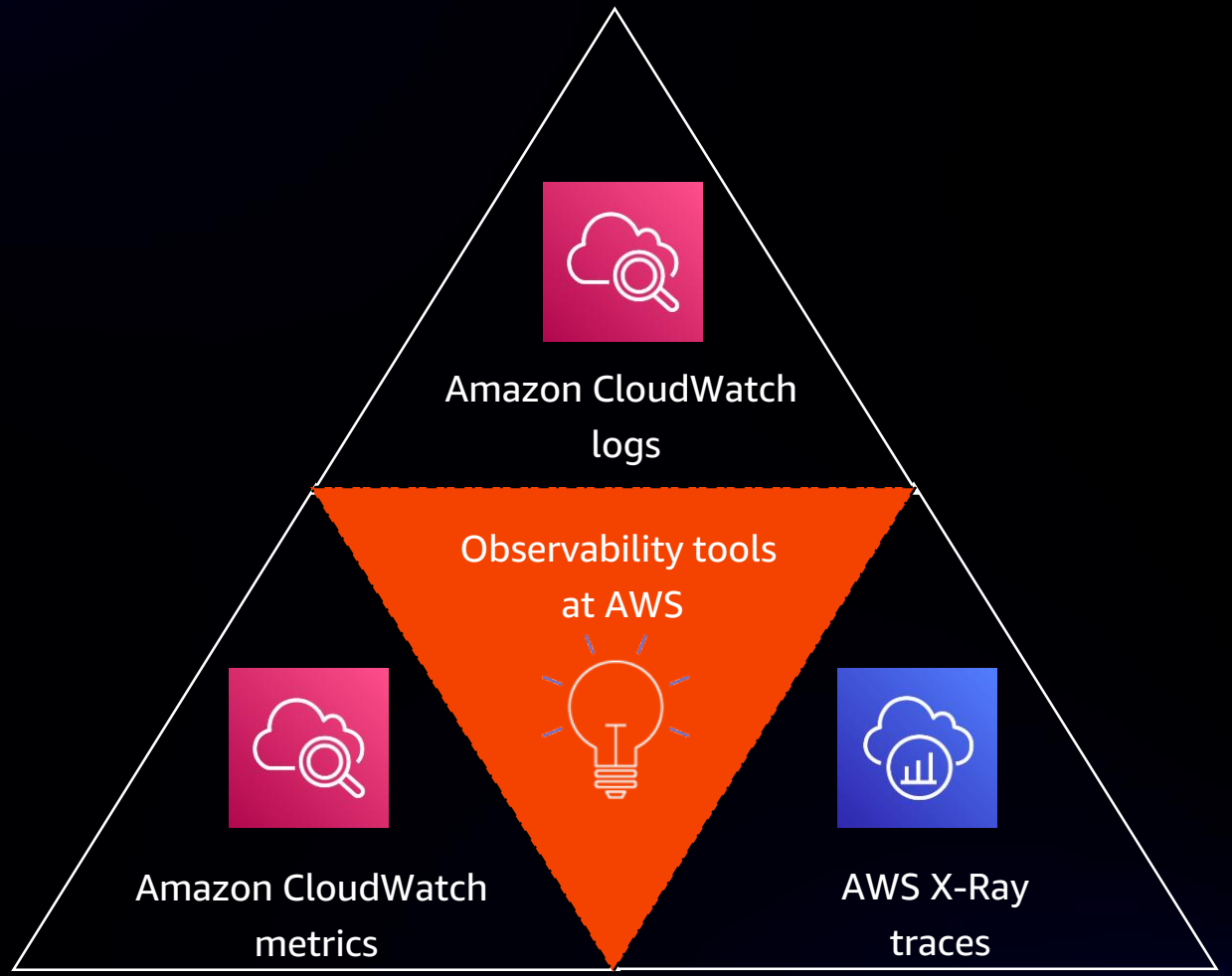
A trace represents the unique journey of a user/request across multiple systems and applications (usually microservices)



Distributed Observability in Distributed Systems
https://www.oreilly.com/library/view/distributed-systems-observability/9781492033431/

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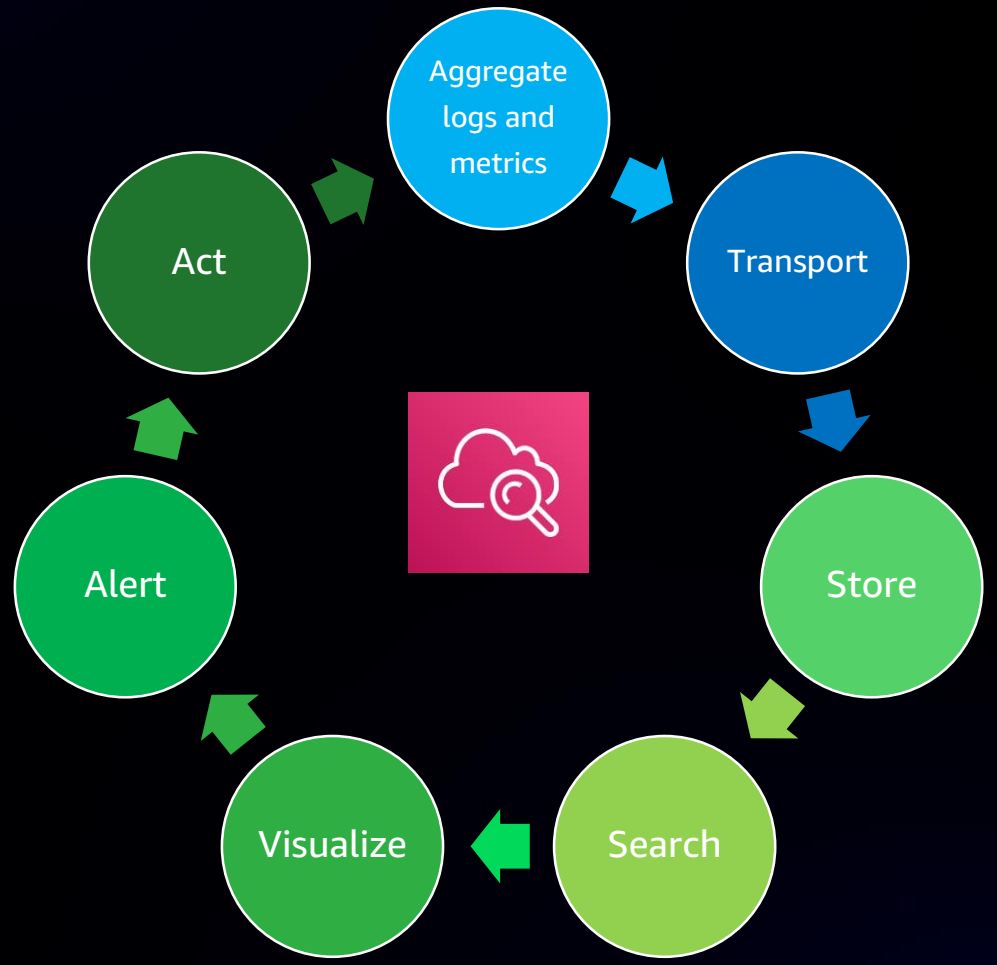
Observability tools



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Amazon CloudWatch can...

LOGS AND METRICS

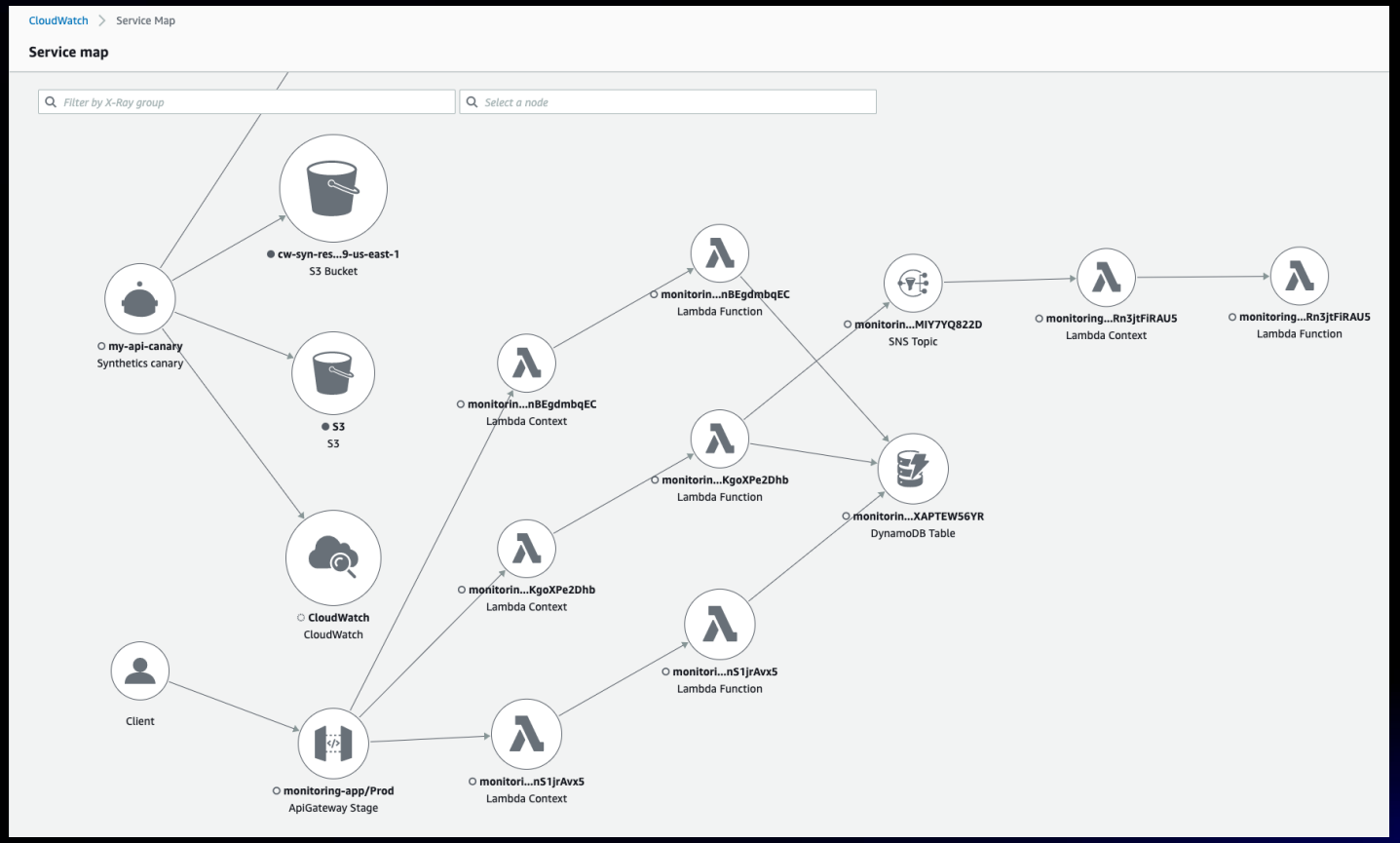


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AWS X-Ray

TRACES

Provides an end-to-end view of requests as they travel through your application, and shows a map of your application's underlying components



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Built-in metrics

METRICS

Amazon API Gateway

4XXError, 5XXError, CacheHitCount, CacheMissCount, Count, IntegrationLatency, Latency

AWS Lambda

Invocations, Errors, DeadLetterErrors, Duration, Throttles, IteratorAge, ConcurrentExecutions, UnreservedConcurrentExecutions, ProvisionedConcurrentExecutions, ProvisionedConcurrencyInvocations, ProvisionedConcurrencySpilloverInvocations, ProvisionedConcurrencyUtilization

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Built-in metrics

METRICS

Amazon DynamoDB

AccountMaxReads, AccountMaxTableLevelReads, AccountMaxTableLevelWrites, AccountMaxWrites, AccountProvisionedReadCapacityUtilization, AccountProvisionedWriteCapacityUtilization, ConditionalCheckFailedRequests, ConsumedReadCapacityUnits, ConsumedWriteCapacityUnits, MaxProvisionedTableReadCapacityUtilization, MaxProvisionedTableWriteCapacityUtilization, OnlineIndexConsumedWriteCapacity, OnlineIndexPercentageProgress, OnlineIndexThrottleEvents, PendingReplicationCount, ProvisionedReadCapacityUnits, ProvisionedWriteCapacityUnits, ReadThrottleEvents, ReplicationLatency, ReturnedBytes, ReturnedItemCount, ReturnedRecordsCount, SuccessfulRequestLatency, SystemErrors, TimeToLiveDeletedItemCount, ThrottledRequests, TransactionConflict, UserErrors, WriteThrottleEvents

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METRICS

Built-in metrics are often not enough

What about caught errors? Warnings?

Caught exceptions are not counted as errors on AWS Lambda.

What about customer/business metrics?

Measure performance against business goals

Revenue, conversions, page views, sign-ups, and so on

What if I want to use other dimensions?

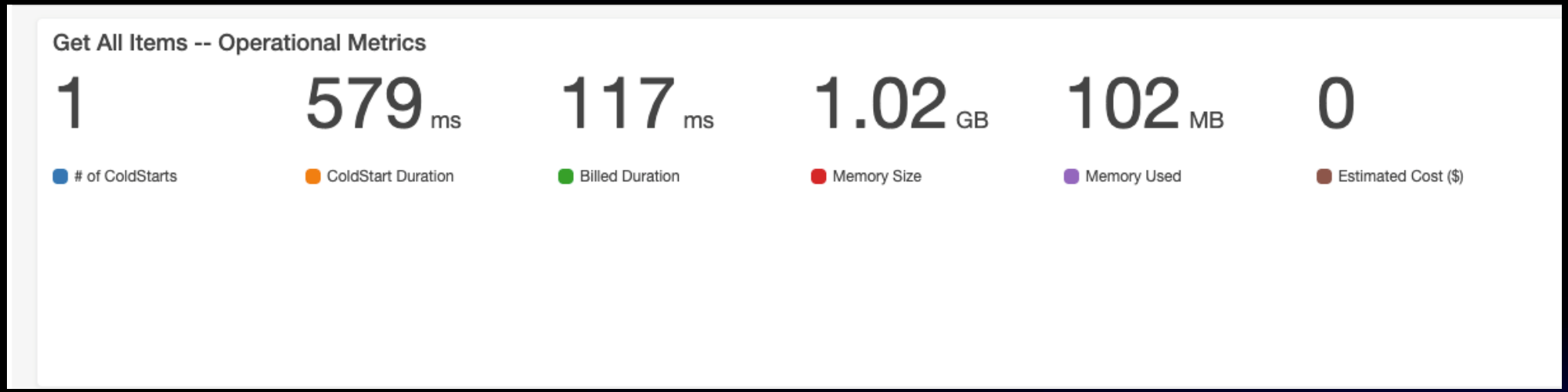
User ID, category, item, tags, environment, and so on

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CloudWatch custom metrics

METRICS





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Troubleshooting process



Amazon CloudWatch alarms



Amazon CloudWatch ServiceLens



AWS X-Ray



AWS X-Ray Analytics



Amazon CloudWatch logs insights

Notification	ServiceLens	Traces	X-Ray Analytics	Logs insights
Receive notifications from Amazon CloudWatch alarm	Check service map, and identify point(s) of interest to further analyze	Check traces, trace maps, and requests belonging to a given service/API for the specific point of interest	Perform a deeper analysis of your traces using AWS X-Ray Analytics, if needed	Look for logs belonging to a specific timeframe to identify the root cause of your problem

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Workshop

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Try the workshop

https://serverless-observability.workshop.aws/

Region: Oregon (us-west-2)

Modules/labs

Start from: Start the workshop > Update your Workspace
Labs: Metrics/Synthetic Canaries/Tracing

Event engine hash

https://dashboard.eventengine.run/login?hash=3df4-1cc59b8404-af

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Thank you!

Enrico Bergamo

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