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Principal Engineer

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Handling Failure from First Principles

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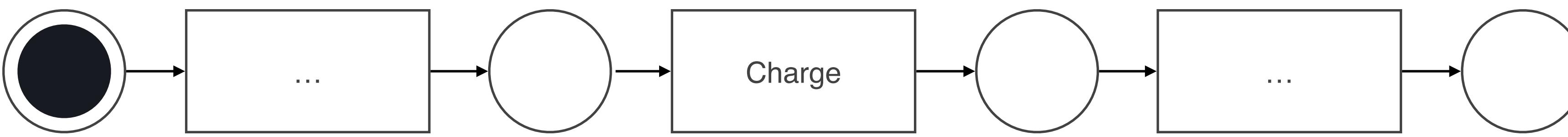
Process



Workflow

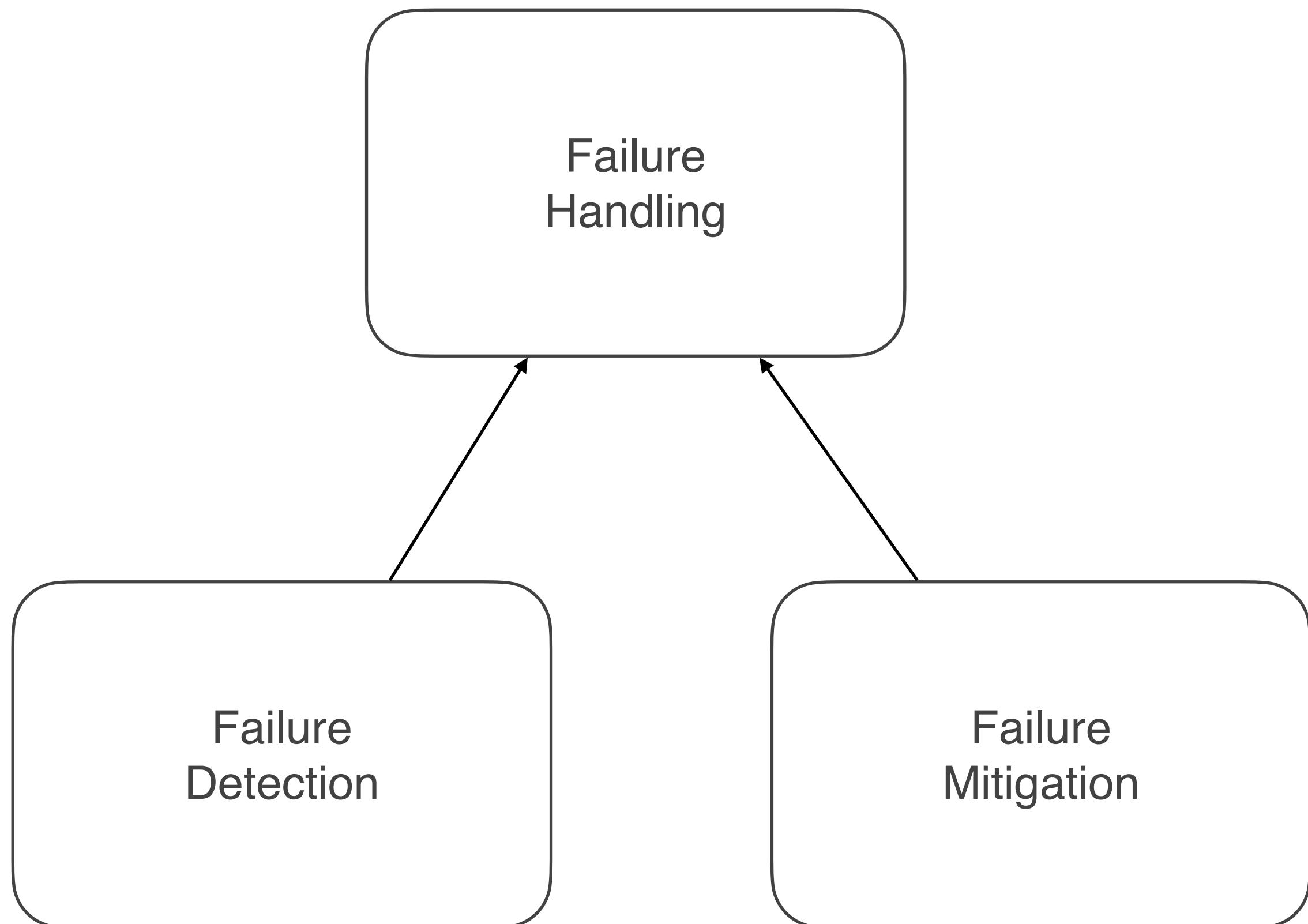


E-Commerce Workflow

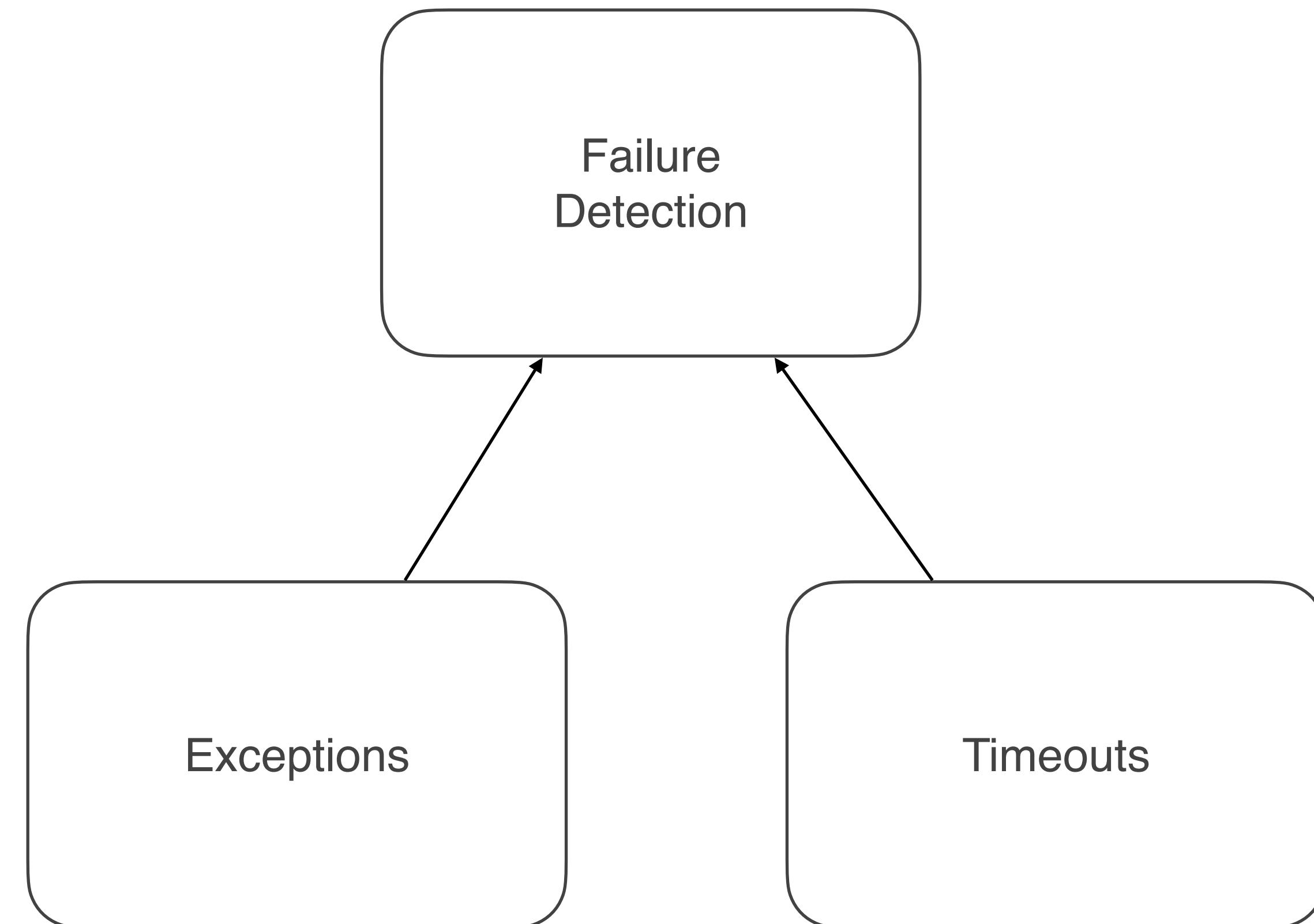


InsufficientFundsException ConnectionException

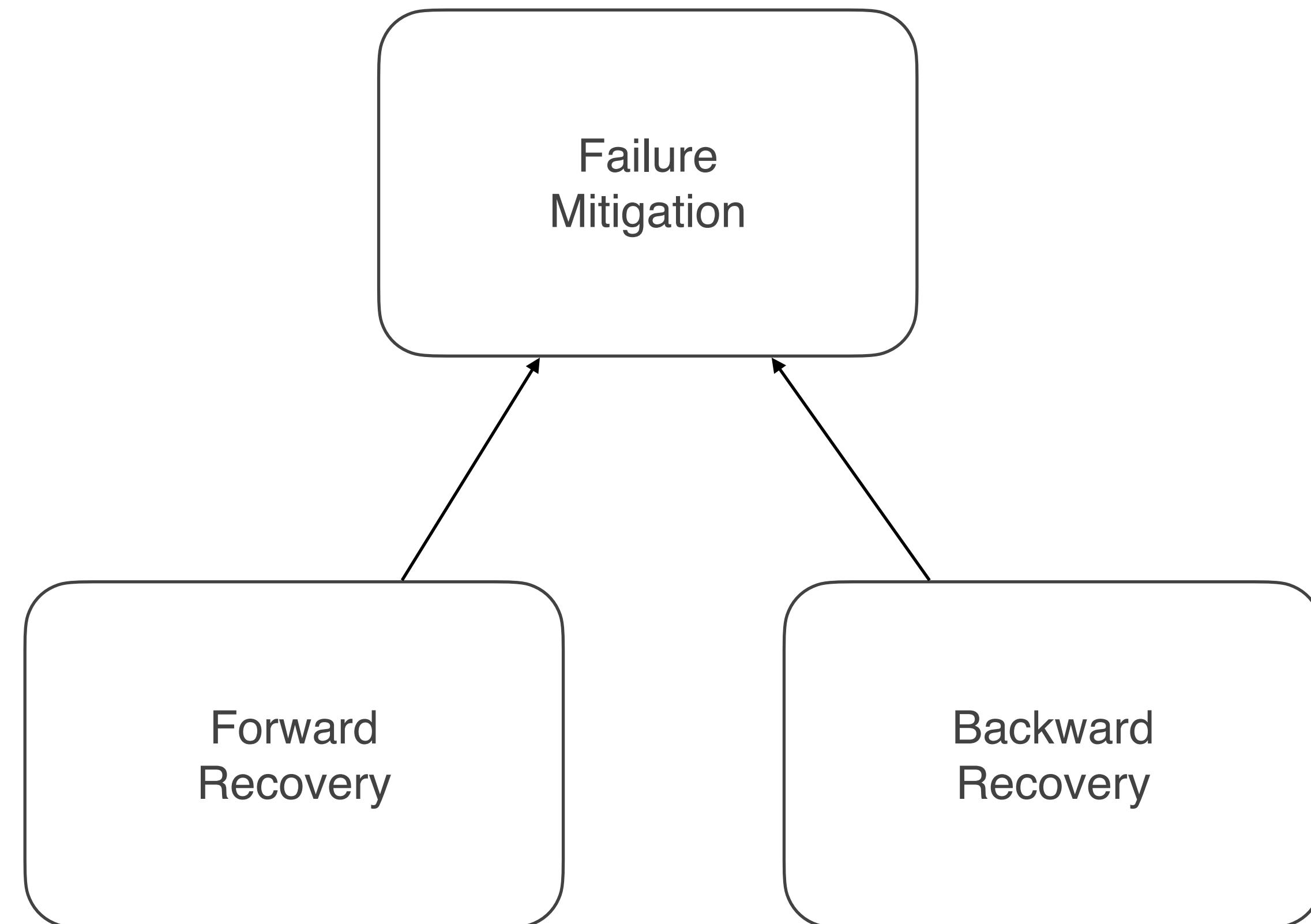
Failure Handling

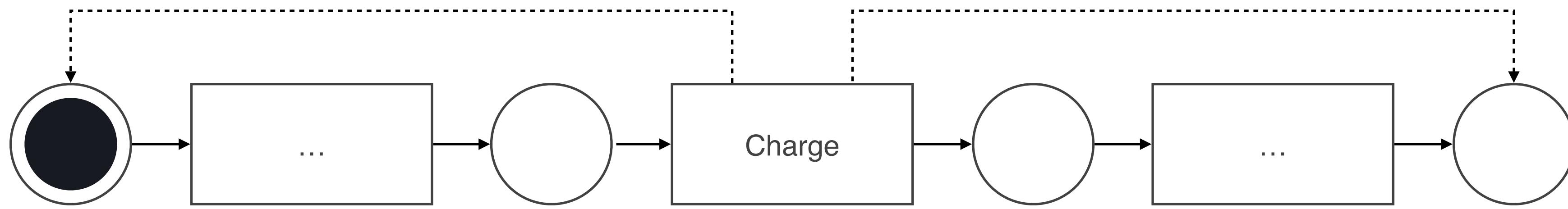


Failure Detection



Failure Mitigation

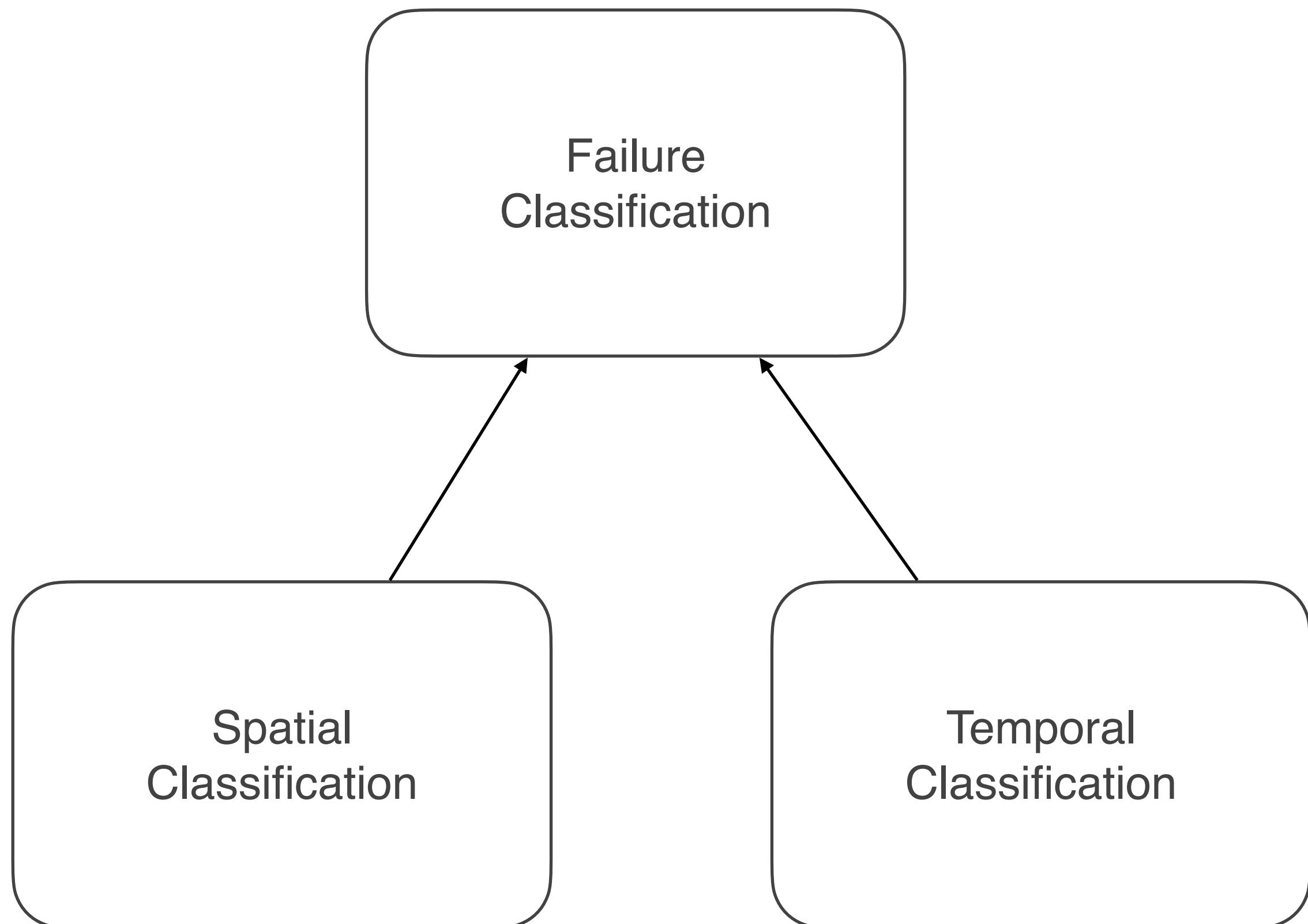




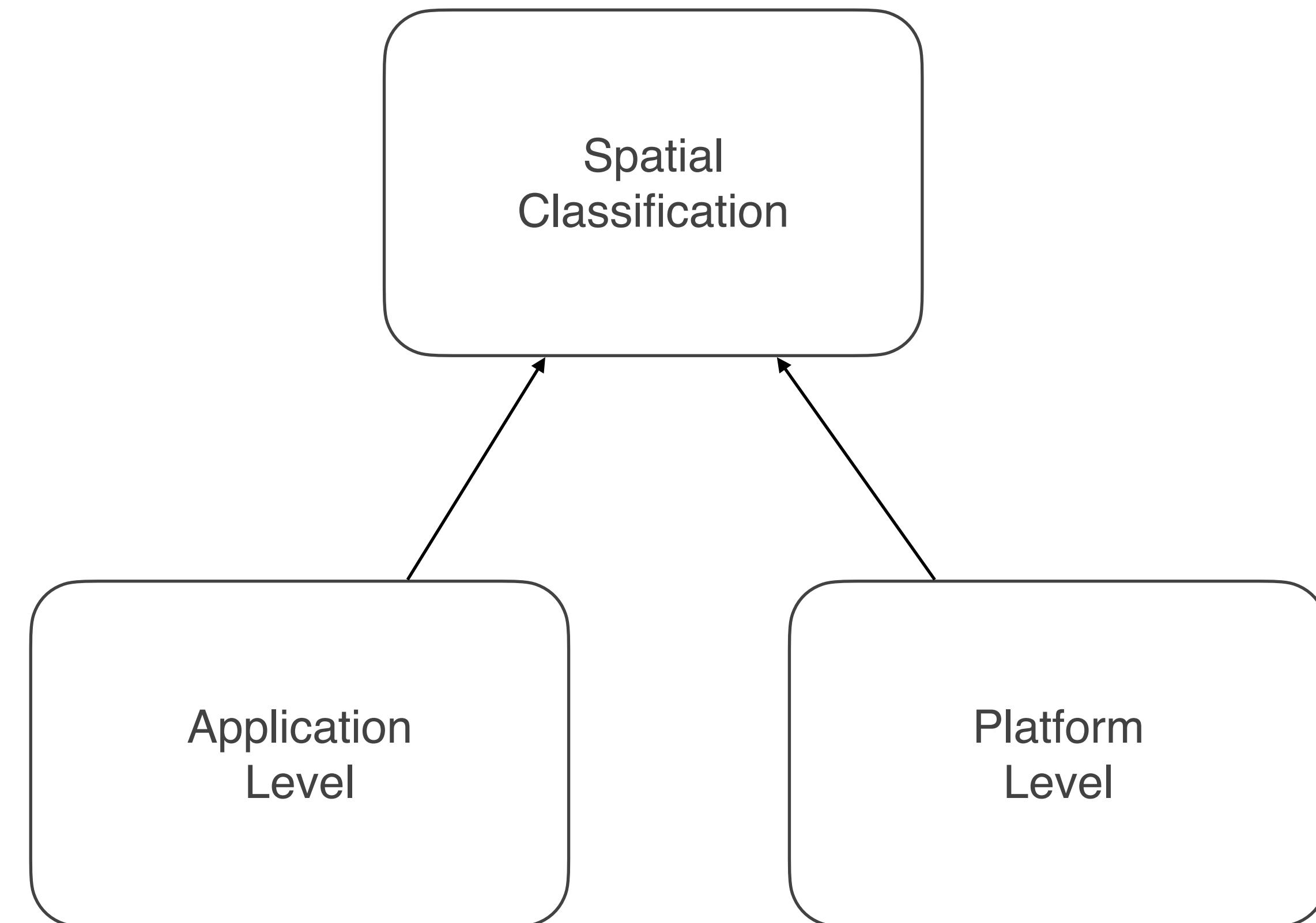
Backward Recovery

Forward Recovery

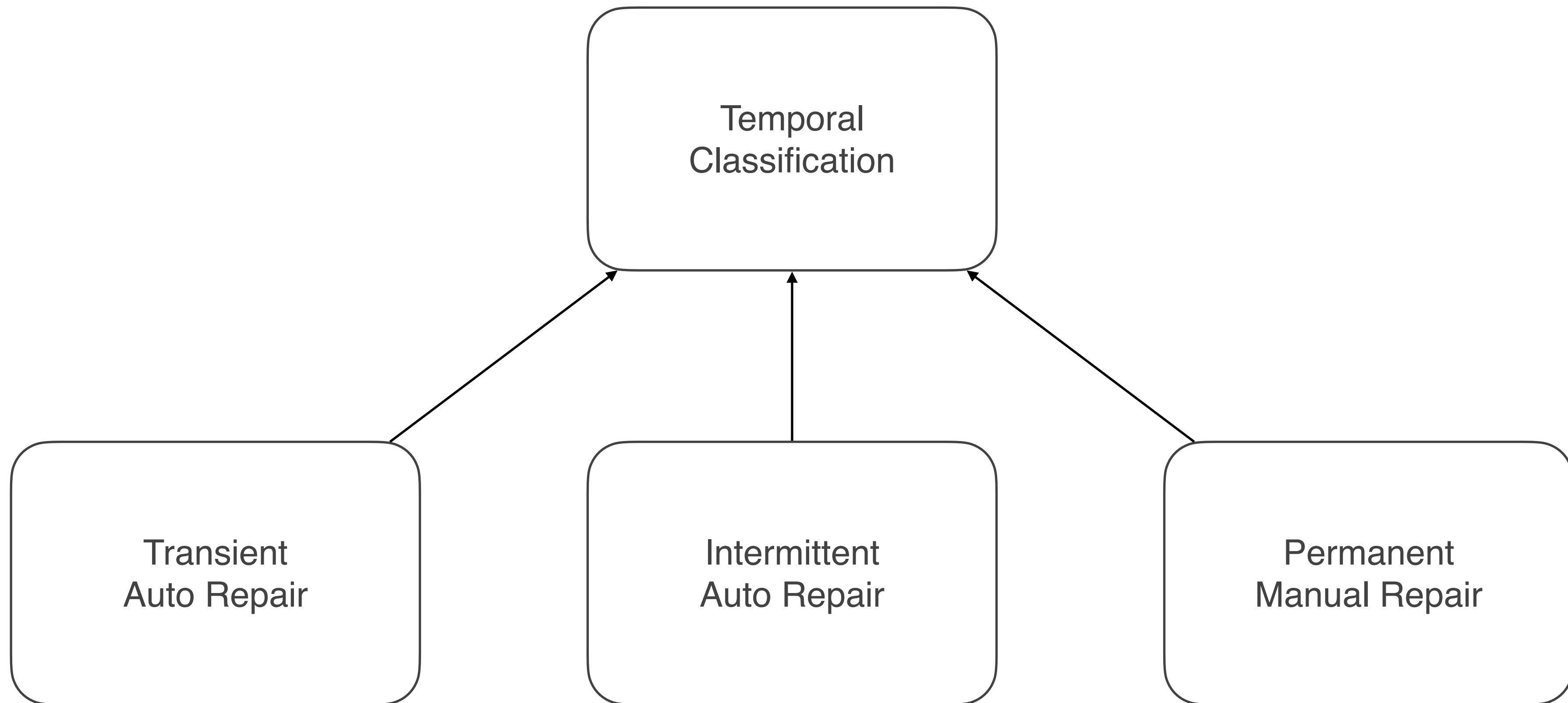
Failure Classification



Spatial Classification



Temporal Classification



$$P(t_2 | t_1) = P(t_2)$$



$$P(t_2 | t_1) > P(t_2)$$



$$P(t_2 | t_1) = 1.0$$

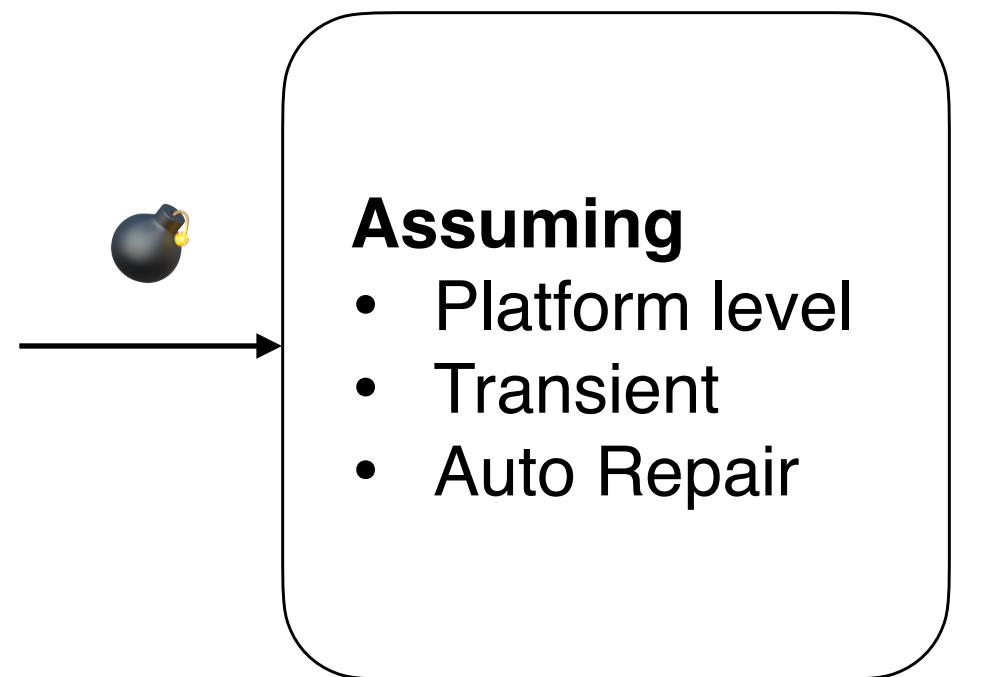


Mitigating Application Level Failure

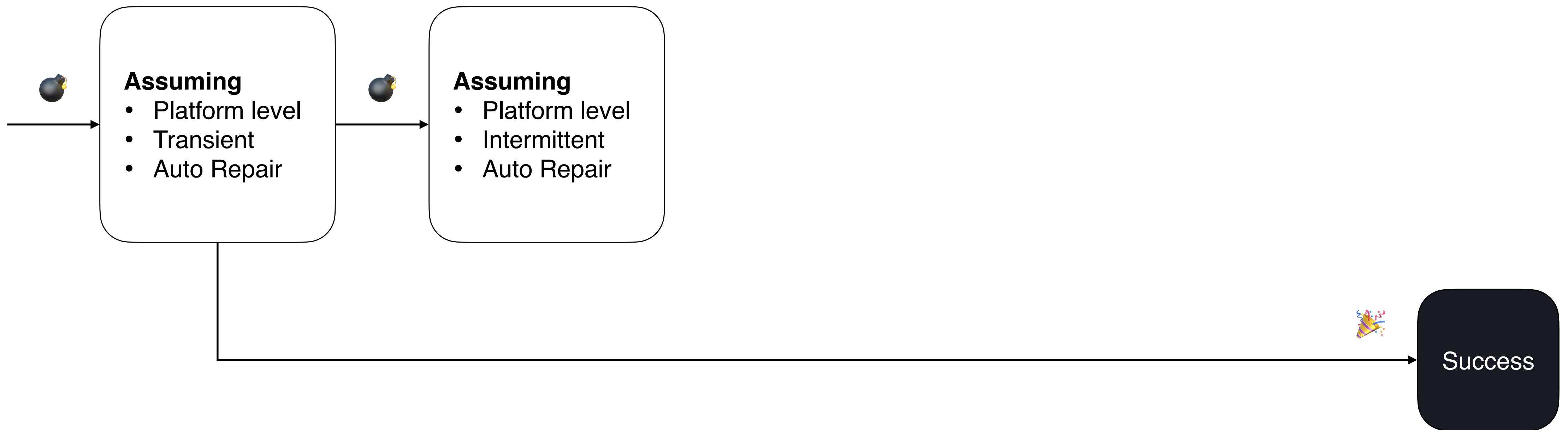
Backward Recovery

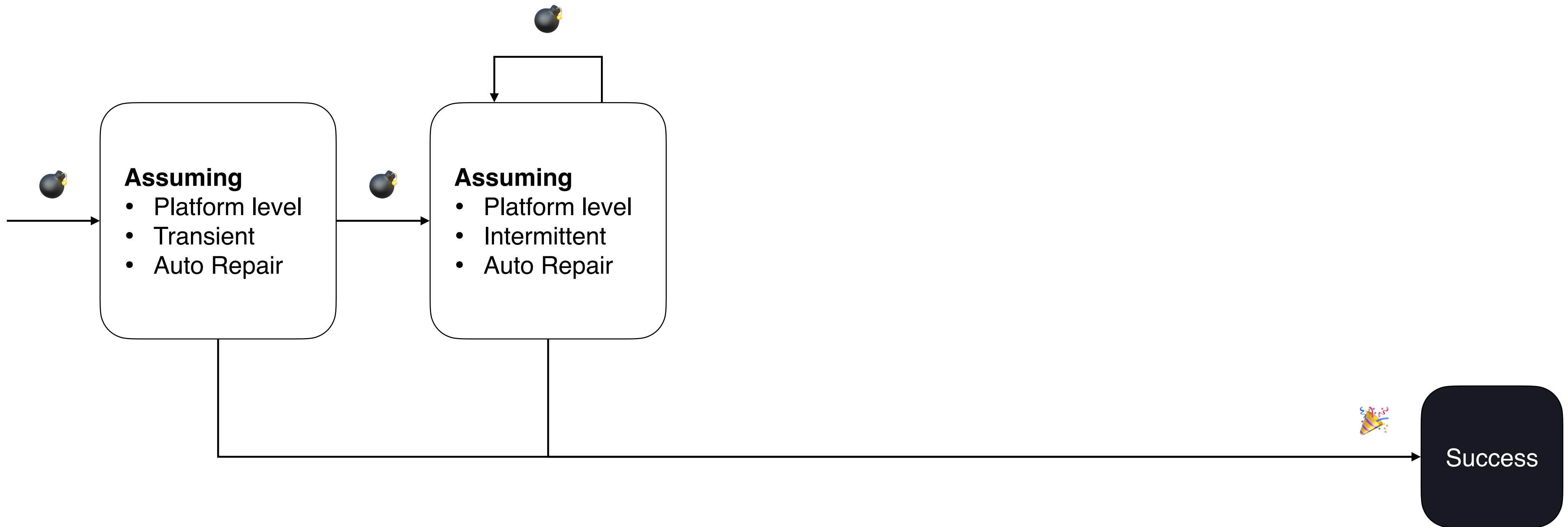
Mitigating Platform Level Failure

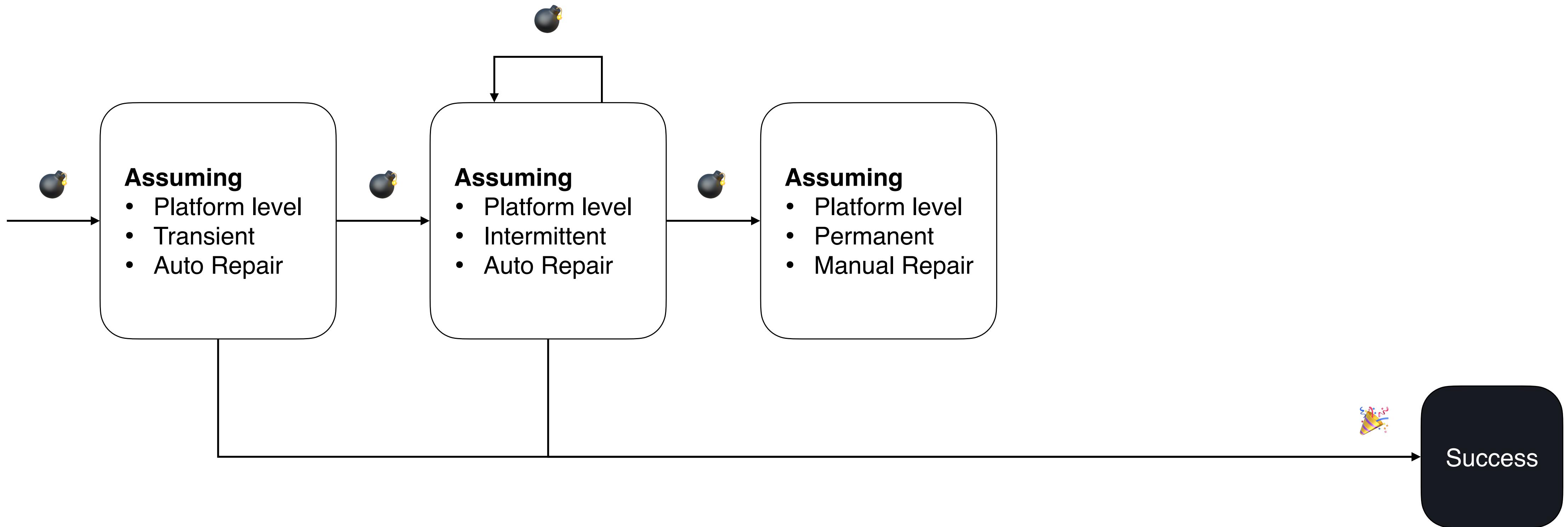
Forward Recovery

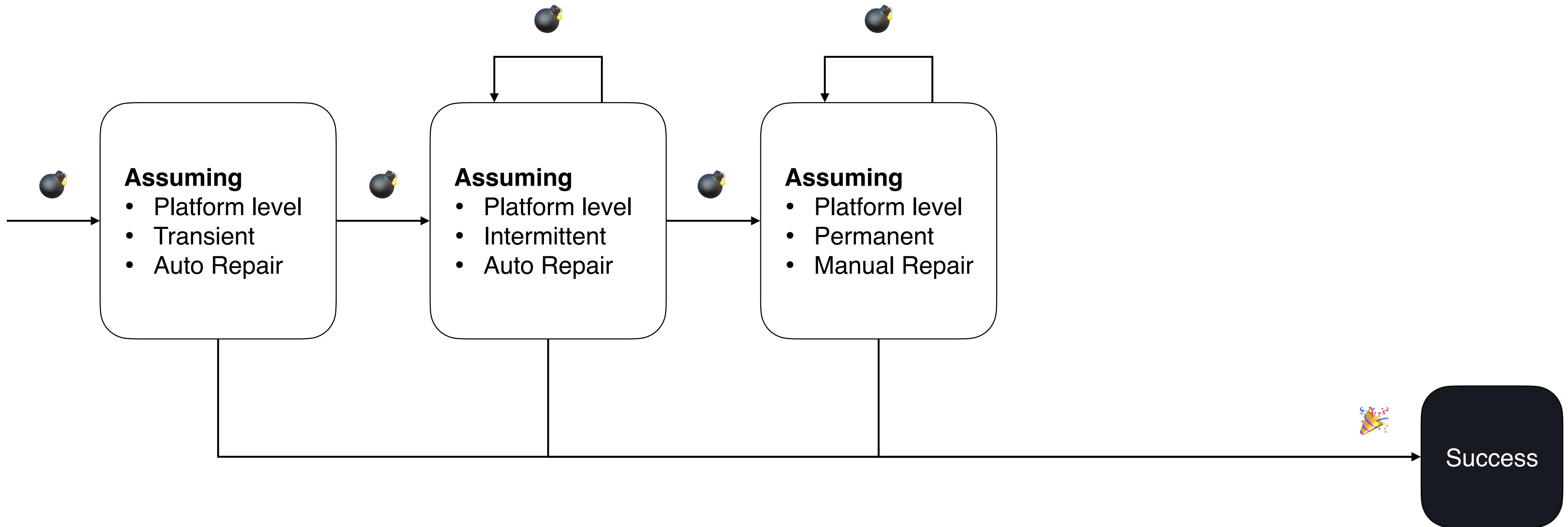


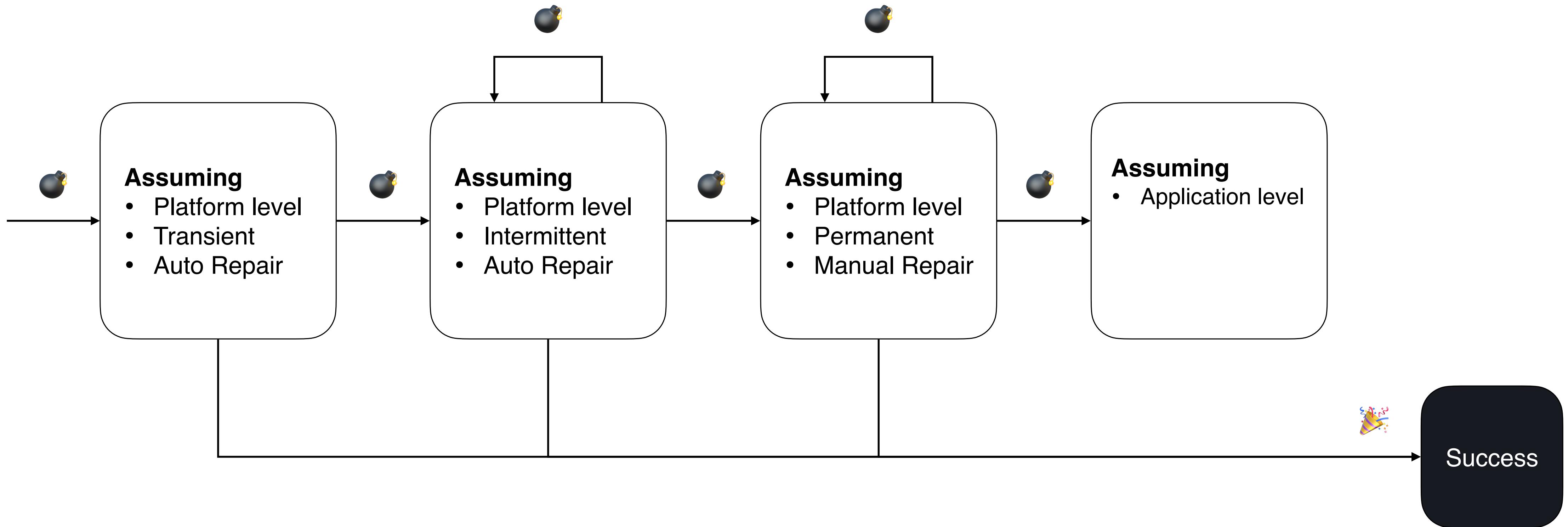


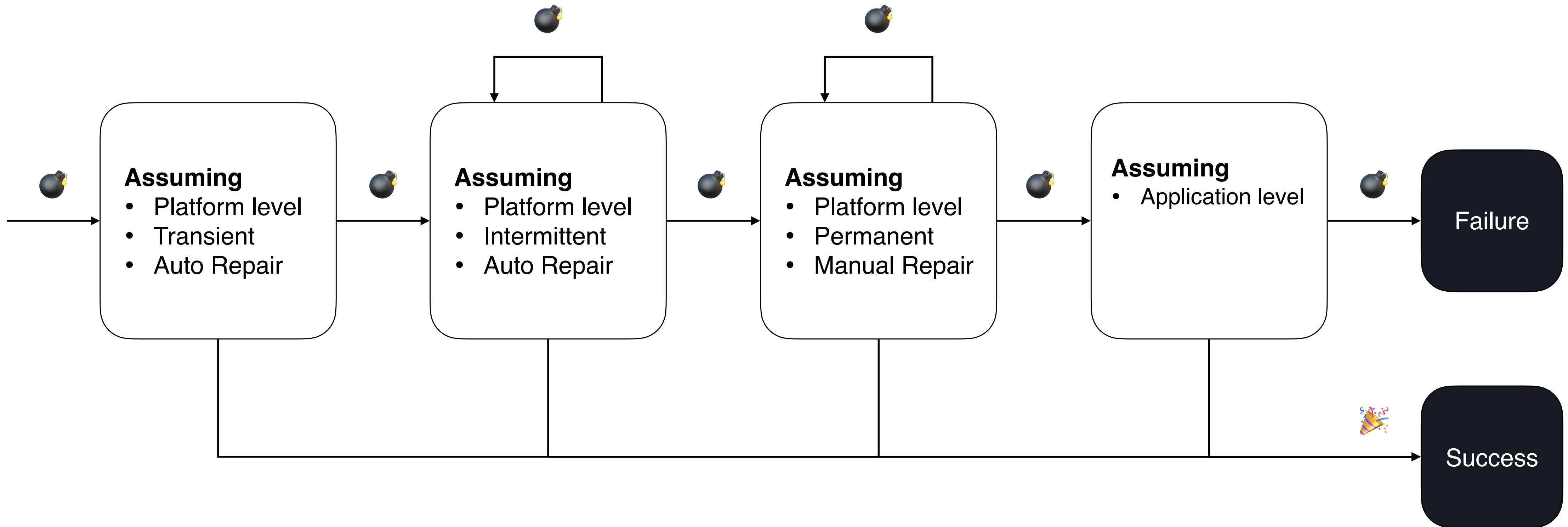


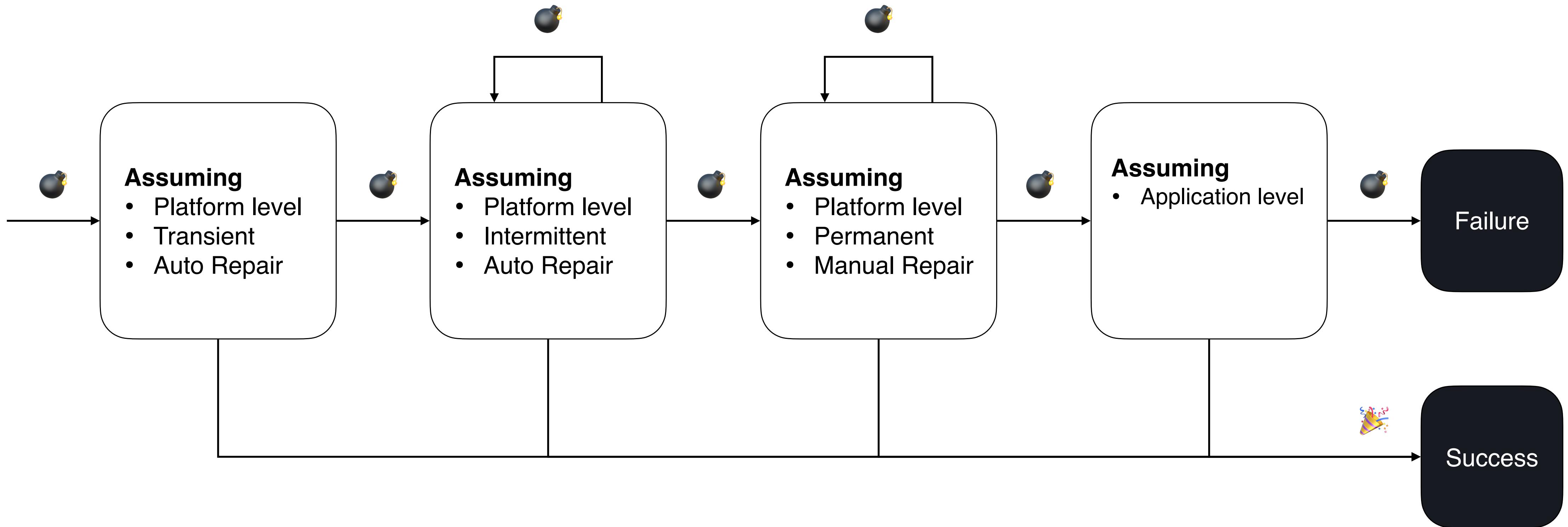










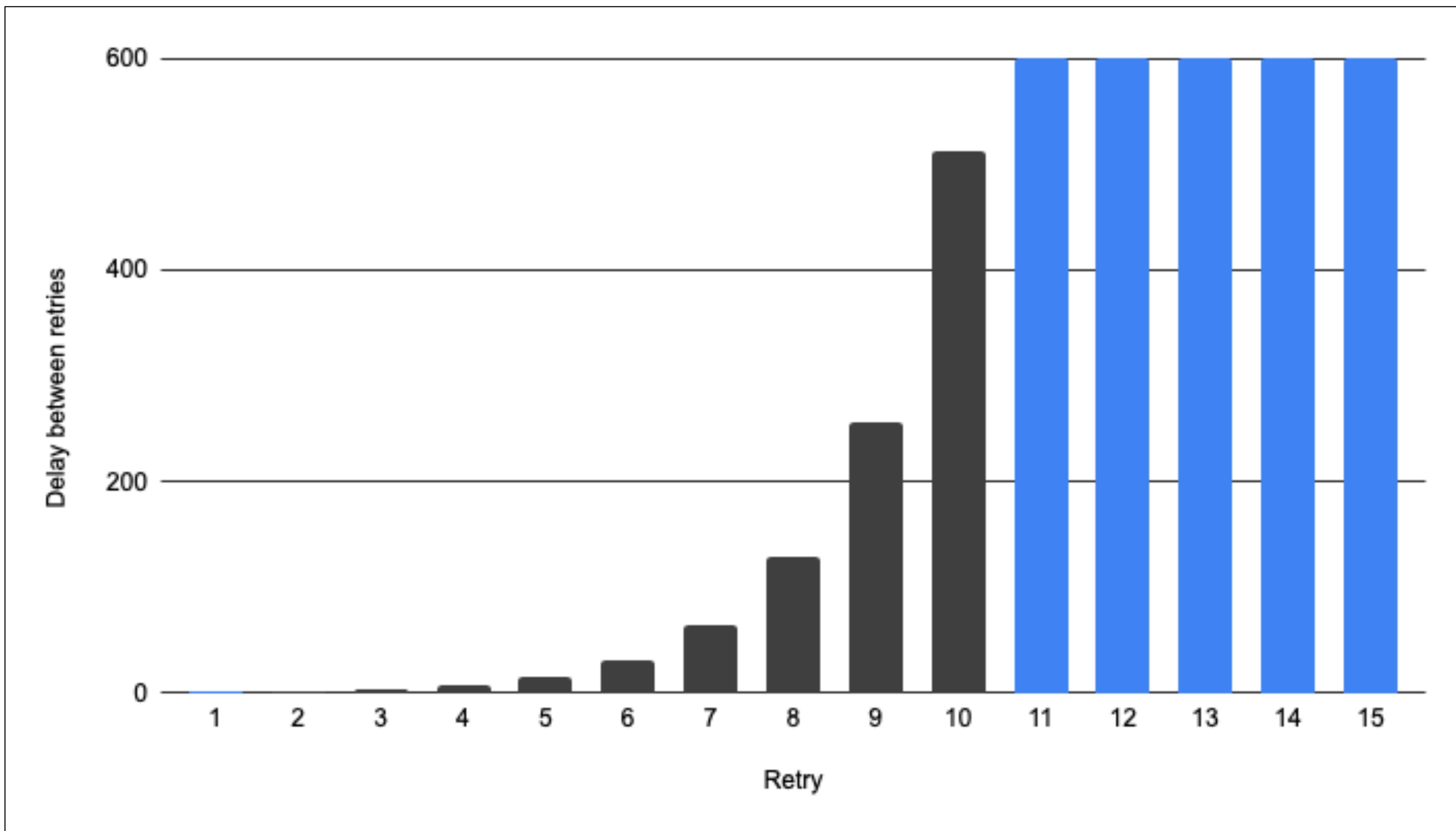


Retry Policy

Initial Interval	= 1 second
Backoff Coefficient	= 2.0
Maximum Interval	= 100 * Initial Interval
Maximum Attempt	= ∞
Non Retryable Errors	= [Insufficient Funds Exception]

Timeouts

Schedule-To-Close Timeout = 1 hour



<https://docs.temporal.io/application-development/features#activity-retry-simulator>



Dominik Tornow
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Check out my new blog post Handling Failures from First Principle.

The post presents a principled failure handling strategy that guarantees correctness & completeness while maximizing the chance of success in the presence of failure.

Some weekend fun 😎



dominik-tornow.medium.com

Handling Failures From First Principles

The post presents a blueprint for a principled failure handling strategy that guarantees correctness while maximizing the chance of success