
VISUAL FIELD GUIDE / FIRST EDITION

QA Decision Maps

100 Practical Thinking Tools

for Quality Engineering

100

DIAGNOSE • DESIGN • DECIDE • EVALUATE • RELEASE • LEARN

A structured visual reference for testers, automation engineers, SDETs, and quality engineers working across modern software systems.

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Document Information

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Purpose

This field guide is designed as a practical thinking aid. Each map helps frame questions, investigate evidence, expose risk, and choose the next action rather than simply memorizing terminology.

Use with judgment

The maps are educational and professional reference tools. Apply them in the context of the product, users, business constraints, engineering architecture, organizational policies, and applicable standards.

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How to Use This Field Guide

The maps are intentionally designed as working tools. Start with the situation in front of you, follow the branches that match the context, and use the map to improve the questions asked before choosing an action.

1

Start with the context

Identify the user, workflow, change, failure, risk, or decision that triggered the need for investigation.

2

Scan before diving deep

Review every primary branch once. The missed branch is often where the highest-value question is hiding.

3

Follow evidence, not assumptions

Use traces, logs, data, API responses, metrics, production signals, and business context to narrow the problem.

4

Prioritize by impact and uncertainty

Test or investigate first where customer impact, business risk, technical uncertainty, and detectability combine.

5

Finish with a decision

A useful QA activity should reduce uncertainty and support an action: fix, test, release, monitor, escalate, refactor, or learn.

A simple working loop

UNDERSTAND → DISCOVER → DESIGN → TEST → DIAGNOSE → DECIDE → LEARN

Use only the branches that add signal. The map supports judgment; the context determines the decision.

01

Failure Diagnosis and Reliability

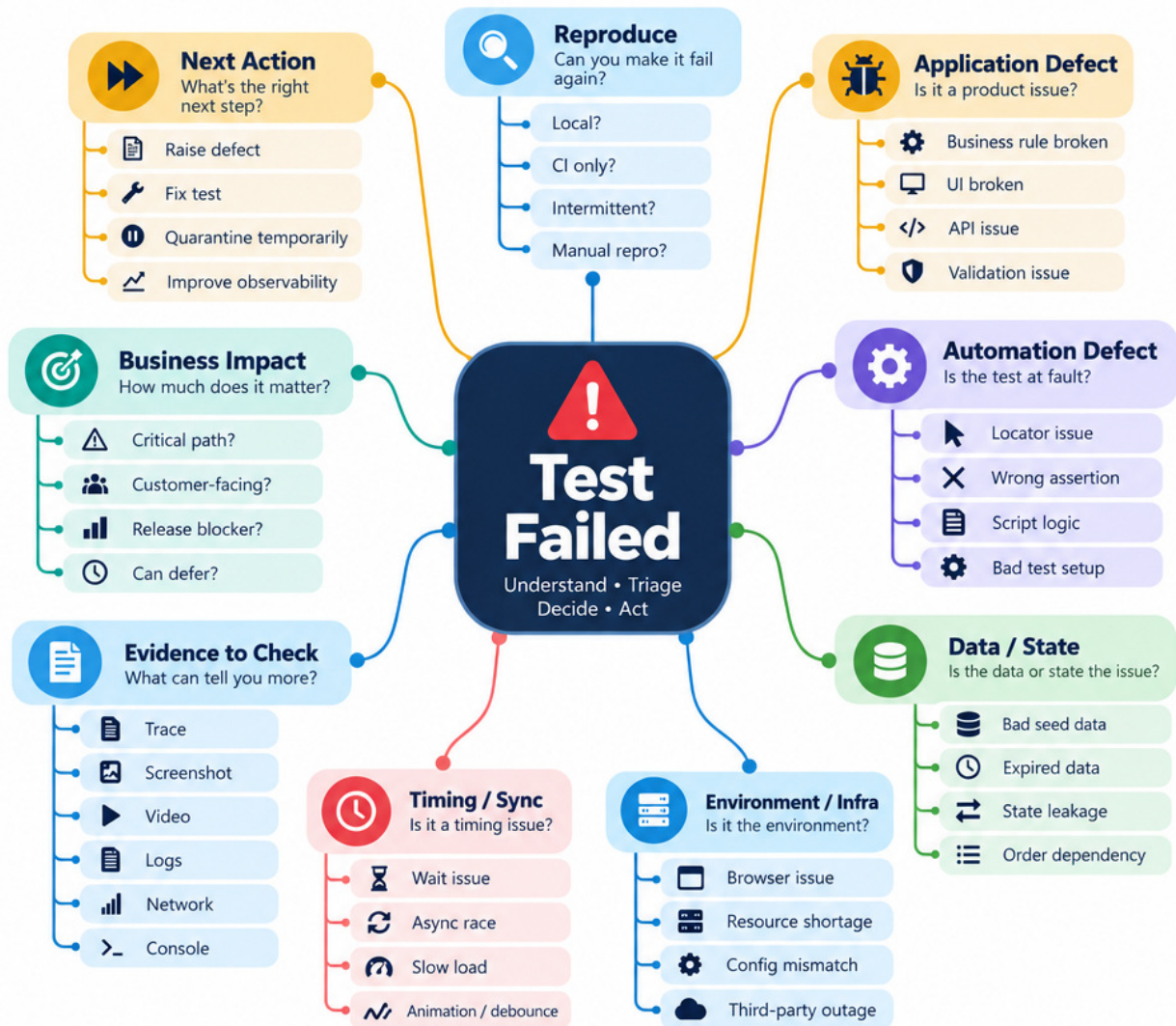
Diagnose unstable behavior, isolate root causes, and improve reliability before failures become recurring noise.

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Test Failure Triage Map

From failed run to the right next action



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Flaky Test Root-Cause Map

Find the real cause behind unstable tests



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Bug Escape Investigation Map

Understand why the defect escaped and prevent repeat



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CI-Only Failure Investigation Map

When it fails only in CI, isolate what is different



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False Failure vs Real Defect Decision Map

Separate product problems from misleading automation signals

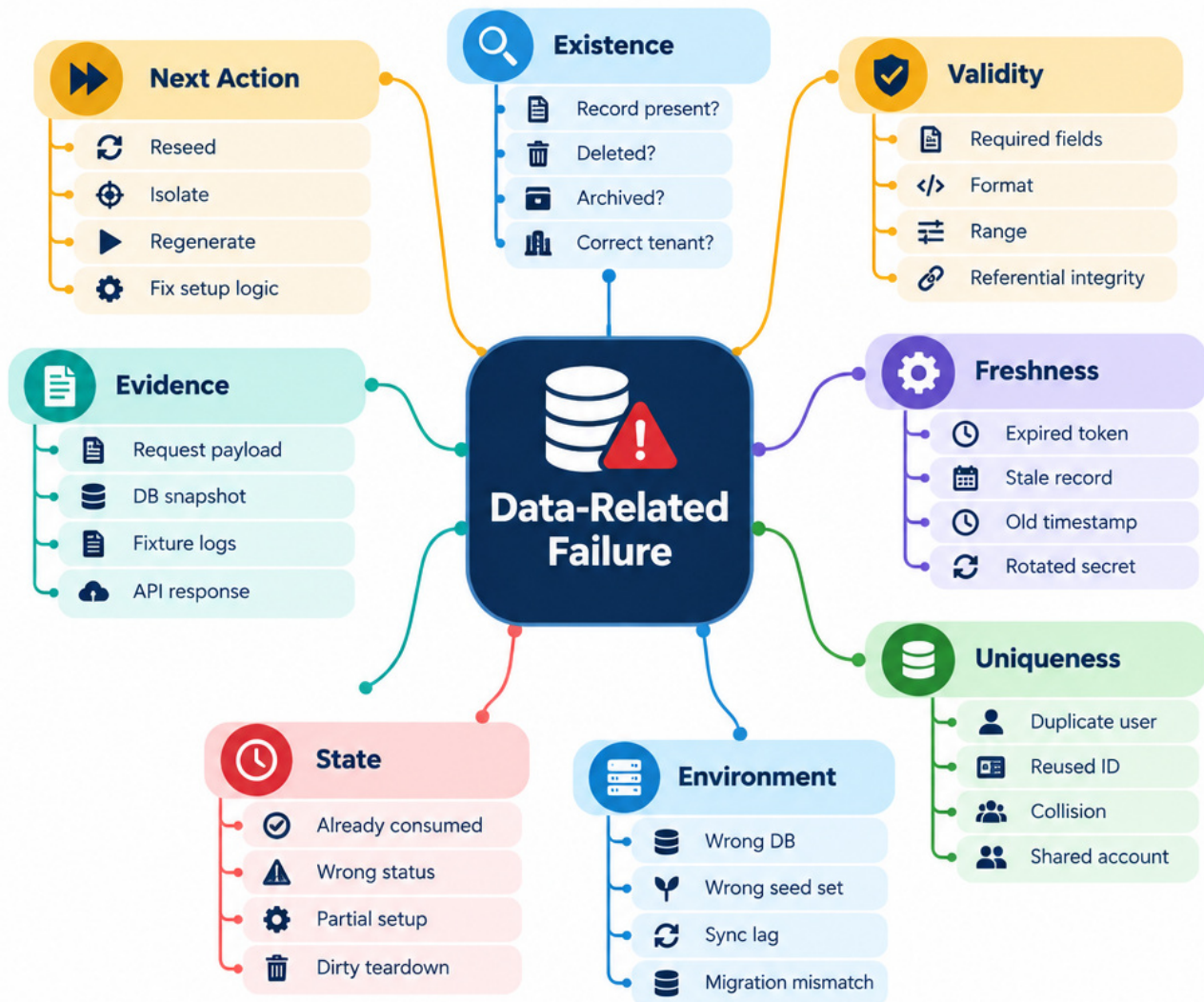


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Test Data Failure Investigation Map

Find whether bad data is causing bad test results

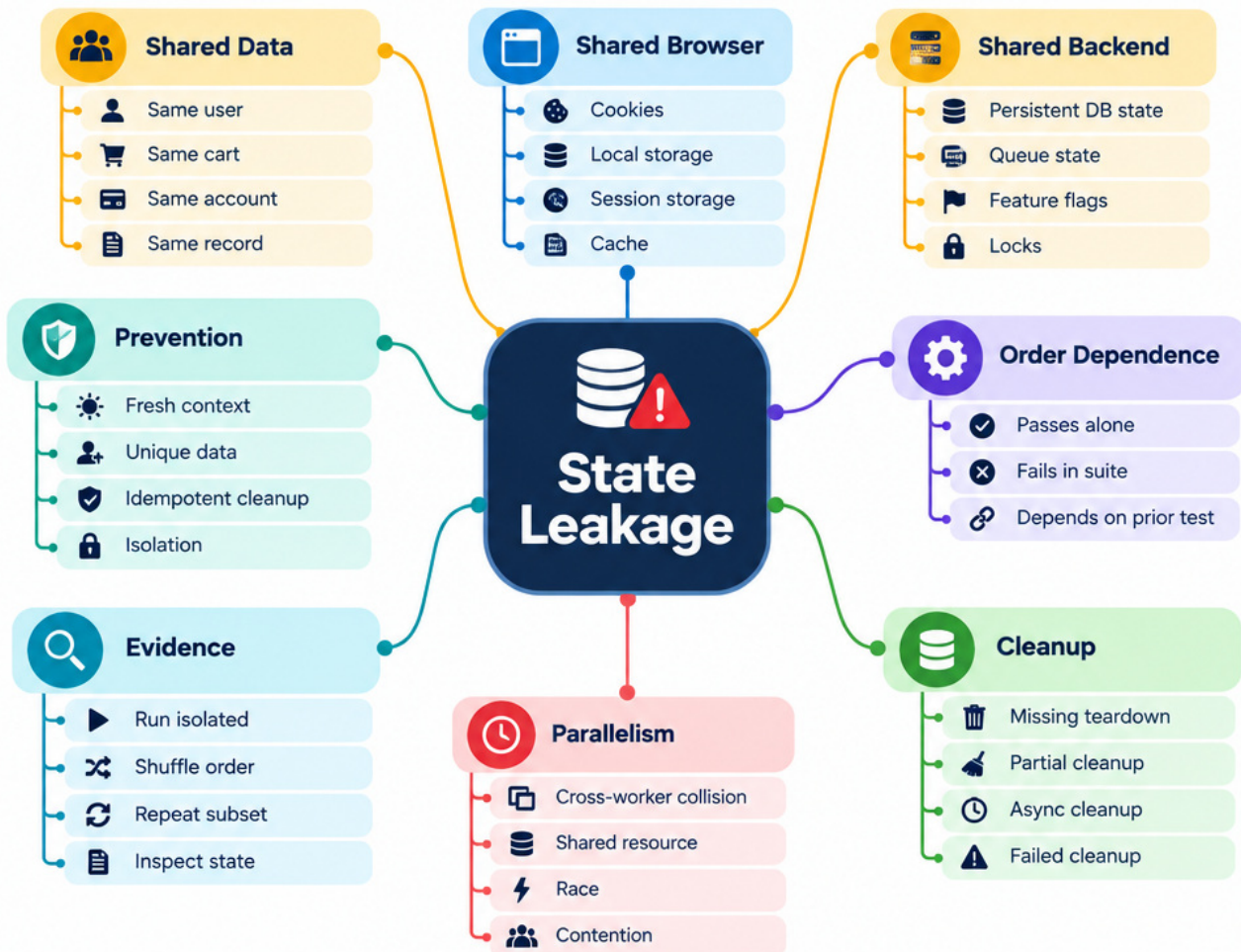


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Test Pollution & State Leakage Investigation Map

Detect when one test changes another test's outcome



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Race Condition Investigation Map

Track failures caused by competing or out-of-order events

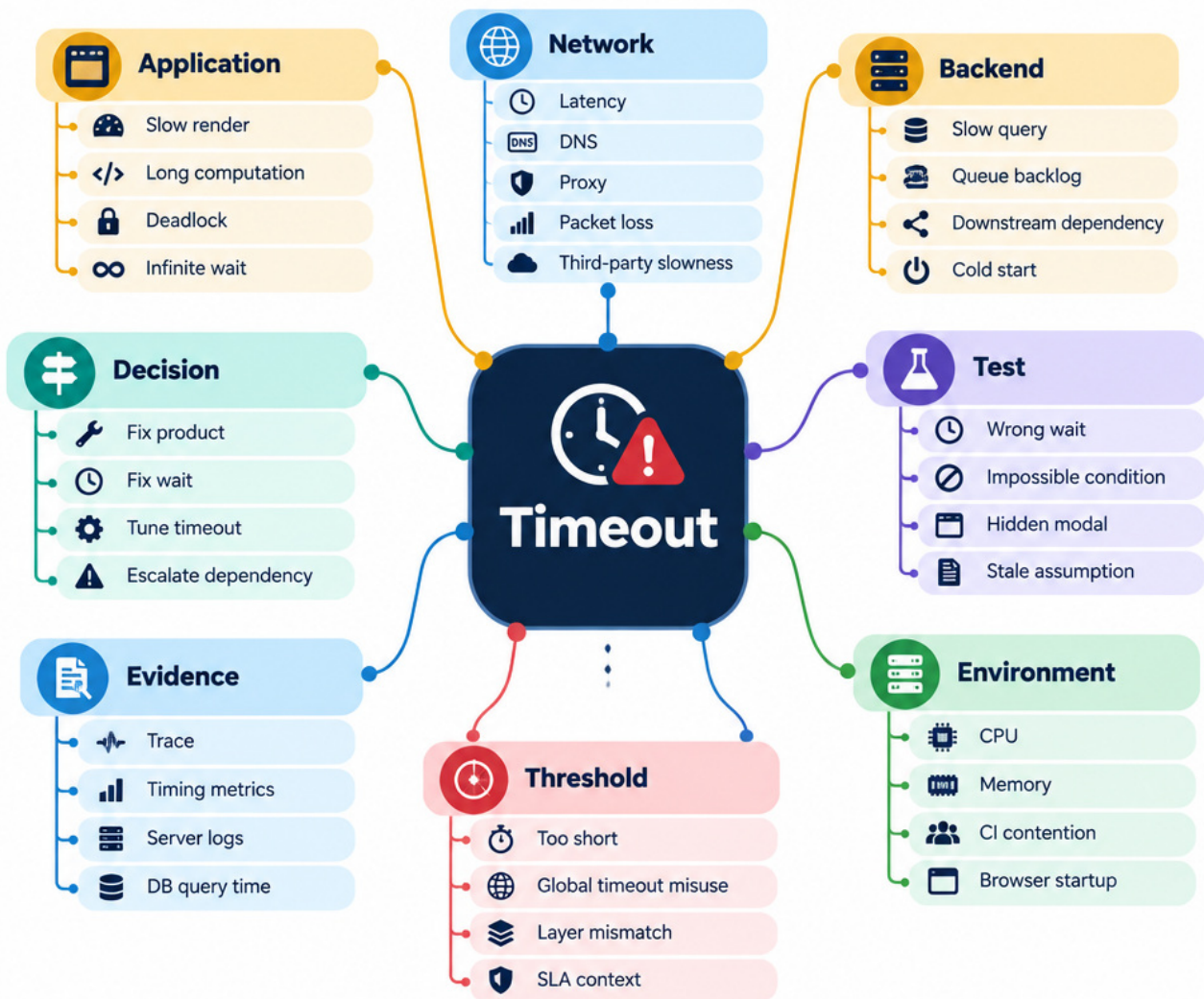


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Timeout Root-Cause Investigation Map

Treat timeouts as symptoms, not diagnoses



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Retry vs Fix Decision Map

Know when a retry is resilience and when it hides instability



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02

Requirements Test Design and Coverage

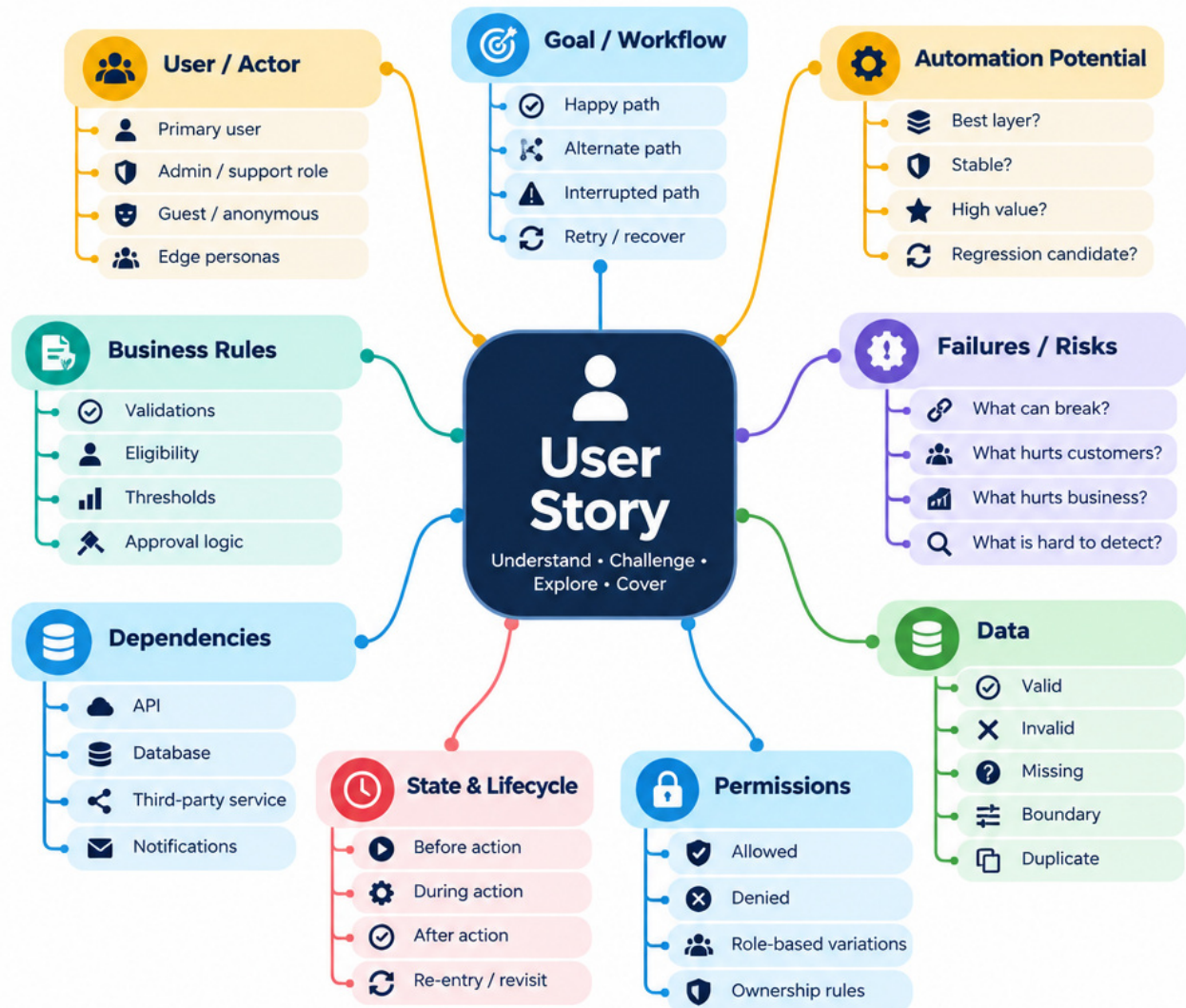
Turn requirements, business rules, data, states, and ambiguity into deliberate, risk-aware test coverage.

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User Story to Test Thinking Map

Turn requirements into meaningful testing ideas

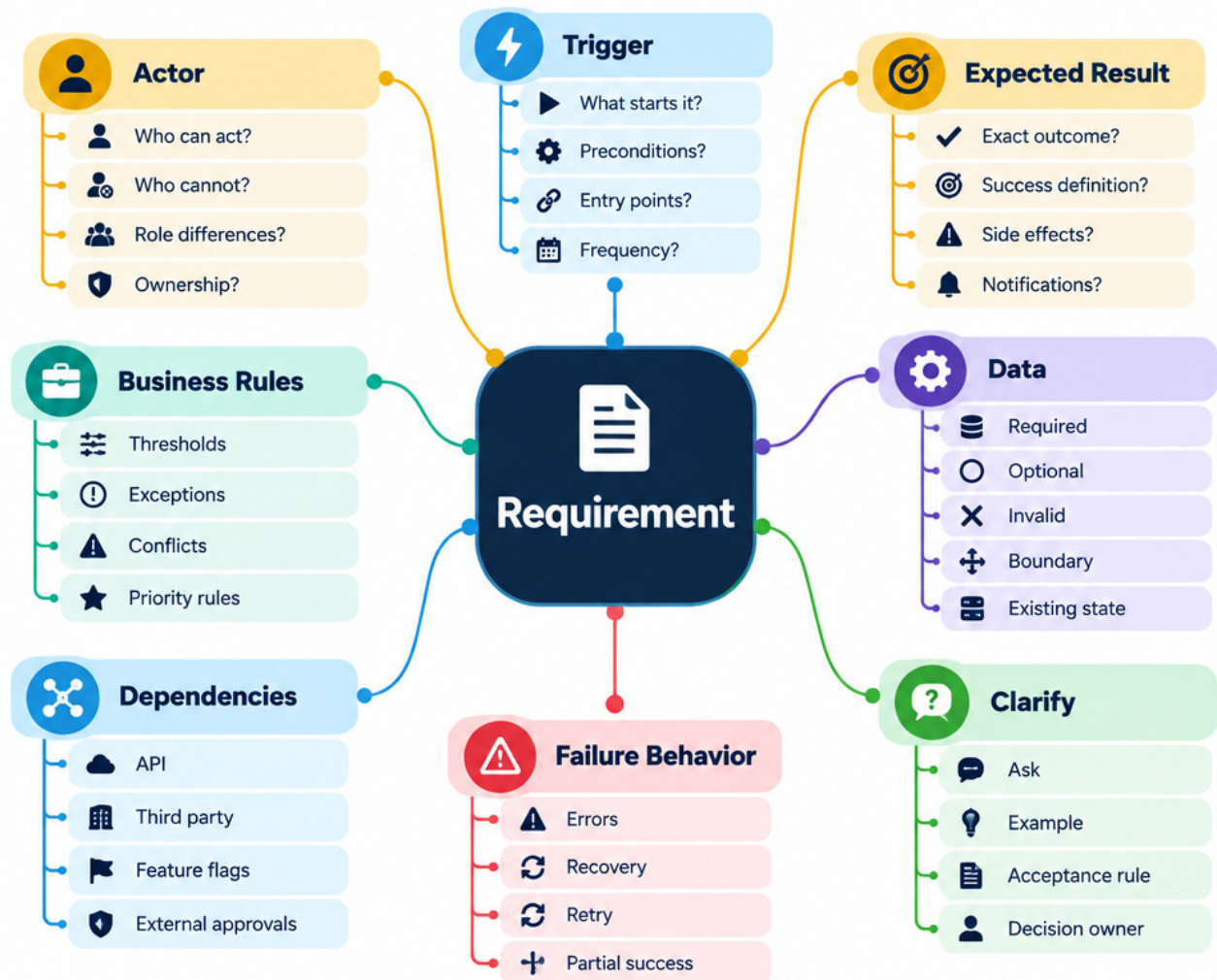


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Requirement Ambiguity Discovery Map

Find what is unclear before ambiguity becomes rework

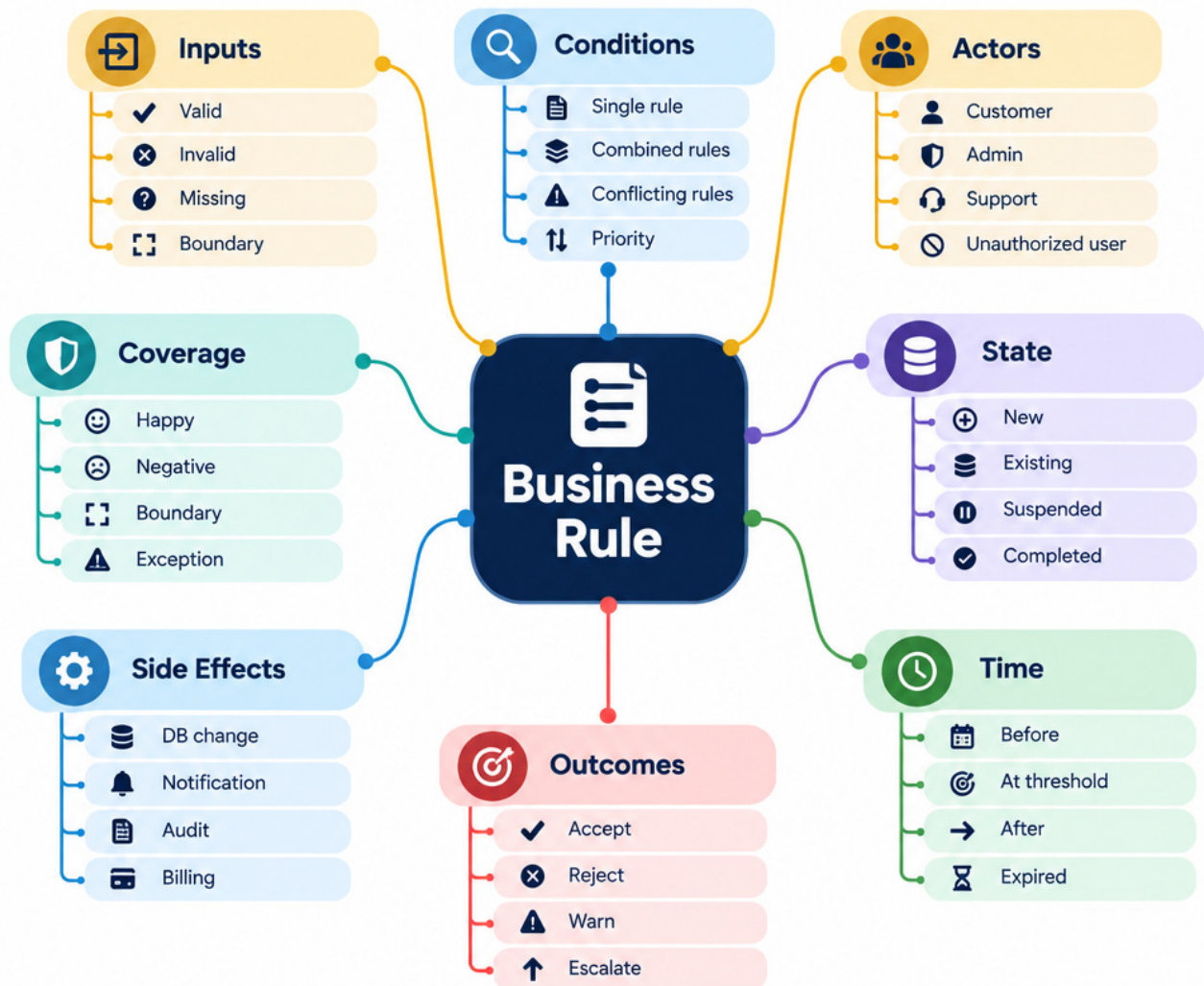


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Business Rule to Test Scenarios Map

Translate business logic into meaningful scenarios

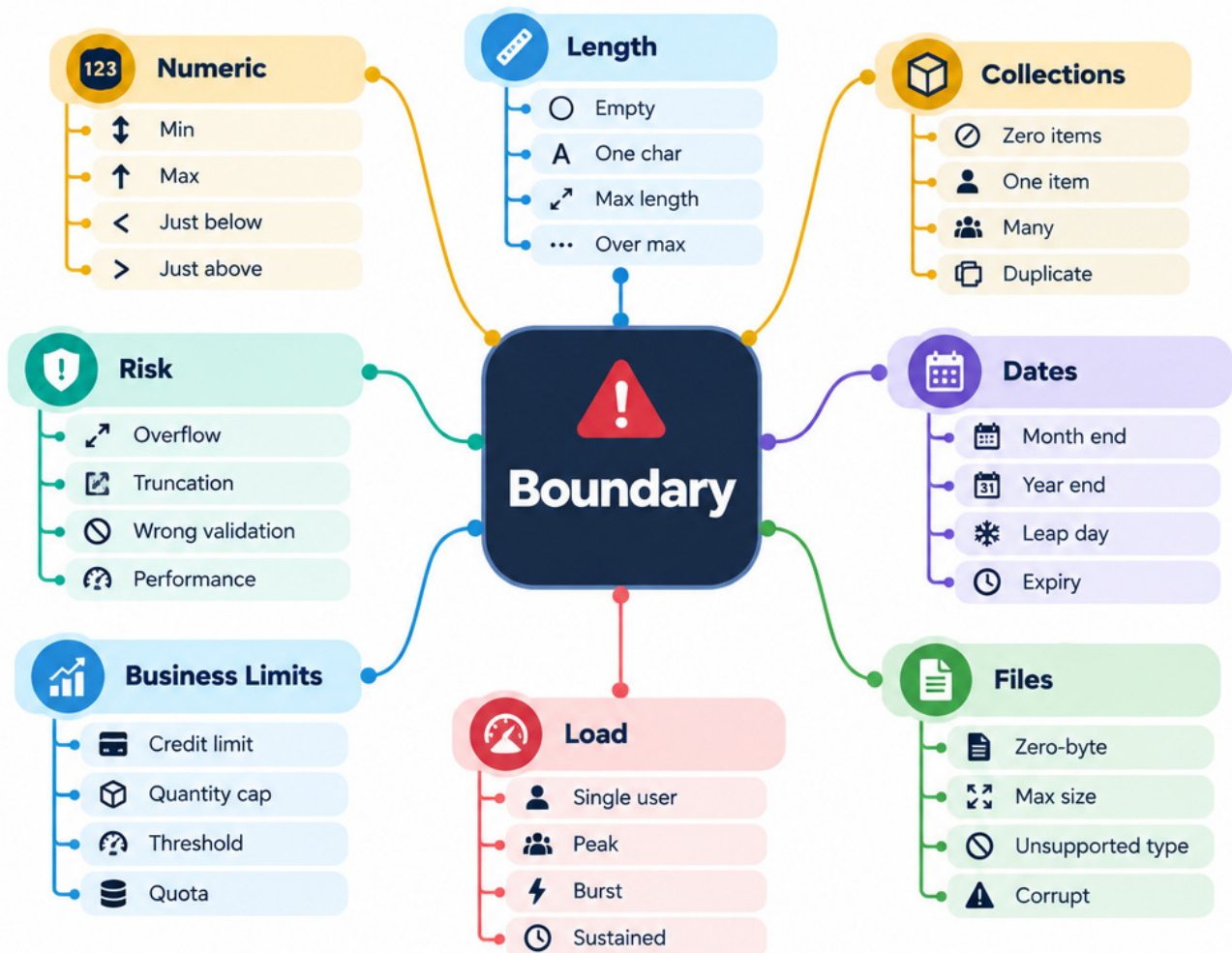


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Boundary & Extreme Condition Discovery Map

Find defects where normal data stops being normal

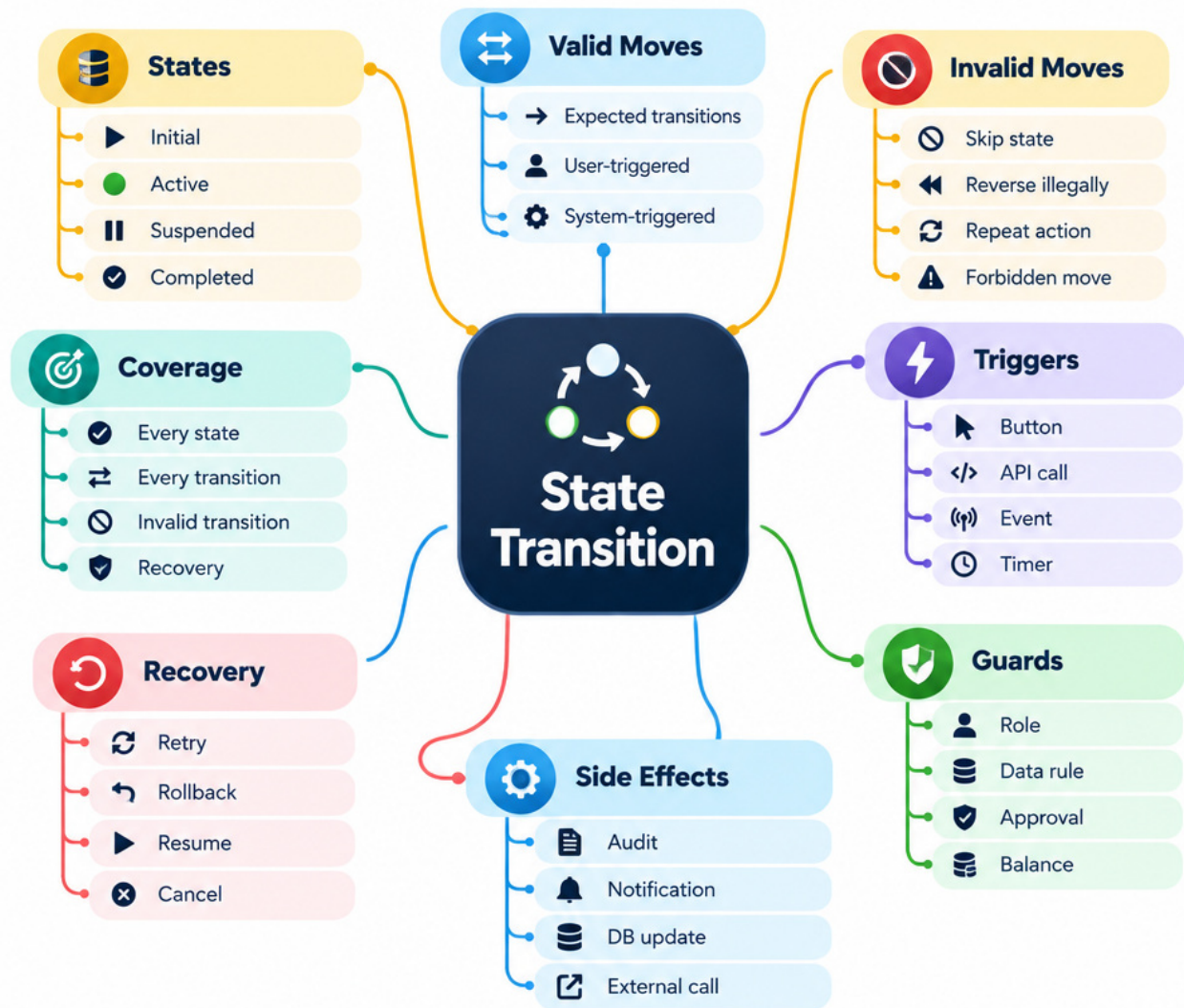


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State Transition Test Thinking Map

Test how behavior changes as state changes

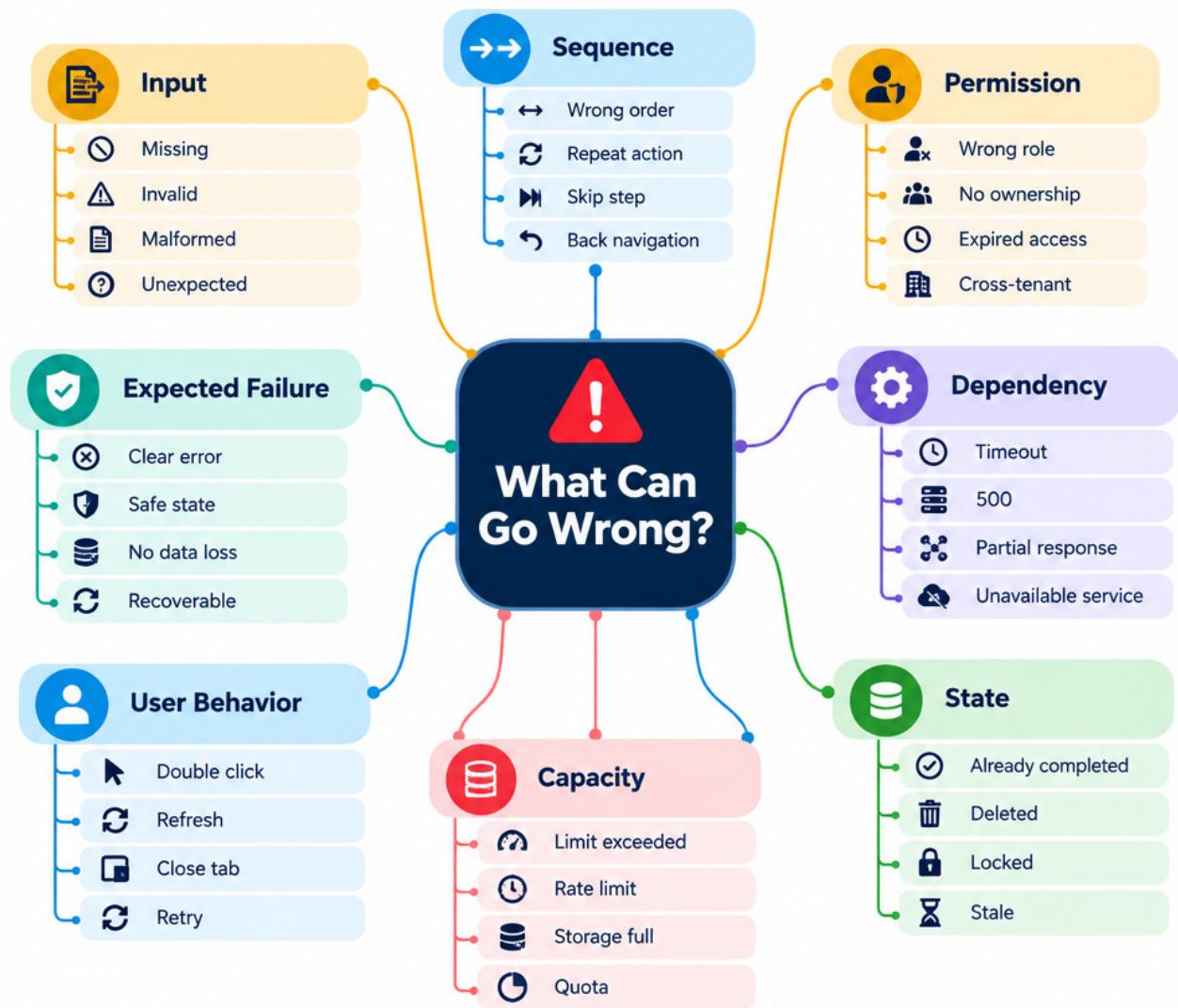


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Negative Testing Discovery Map

Design failures deliberately instead of waiting to find them



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Role & Permission Test Design Map

Test access boundaries, not just successful login

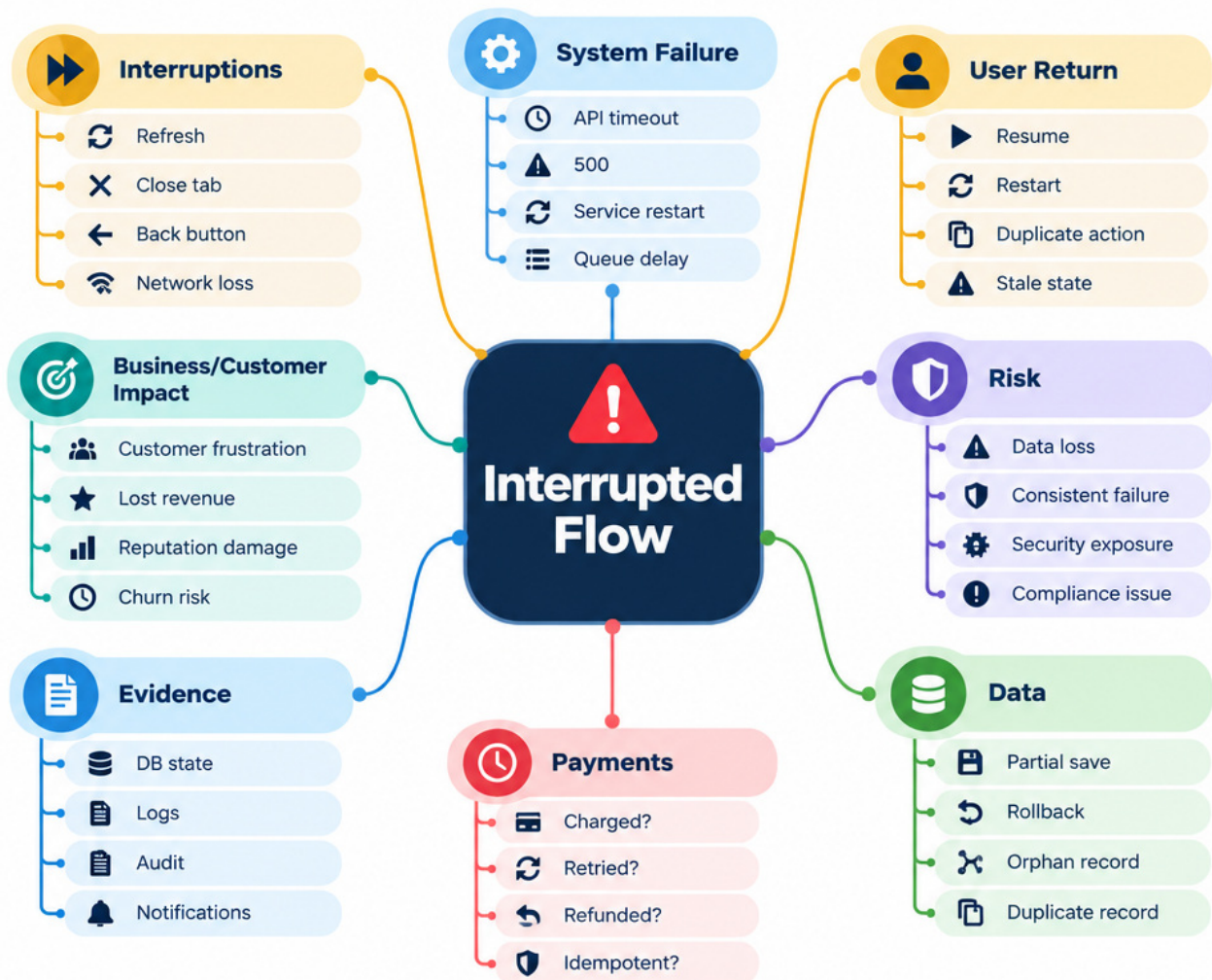


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Interrupted Workflow & Recovery Map

Test what happens when users cannot finish a journey cleanly

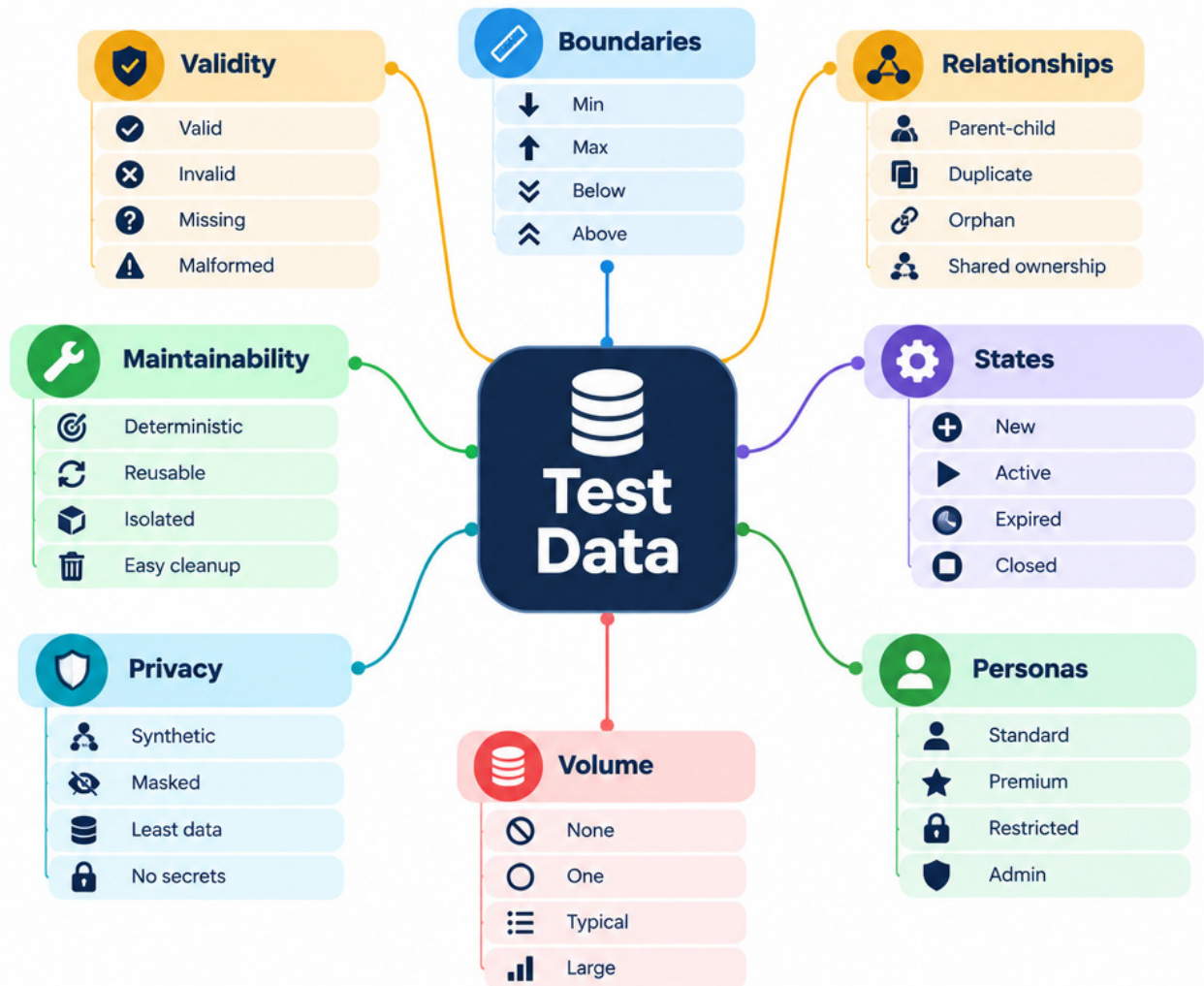


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Test Data Scenario Design Map

Choose data that exposes meaningful behavior

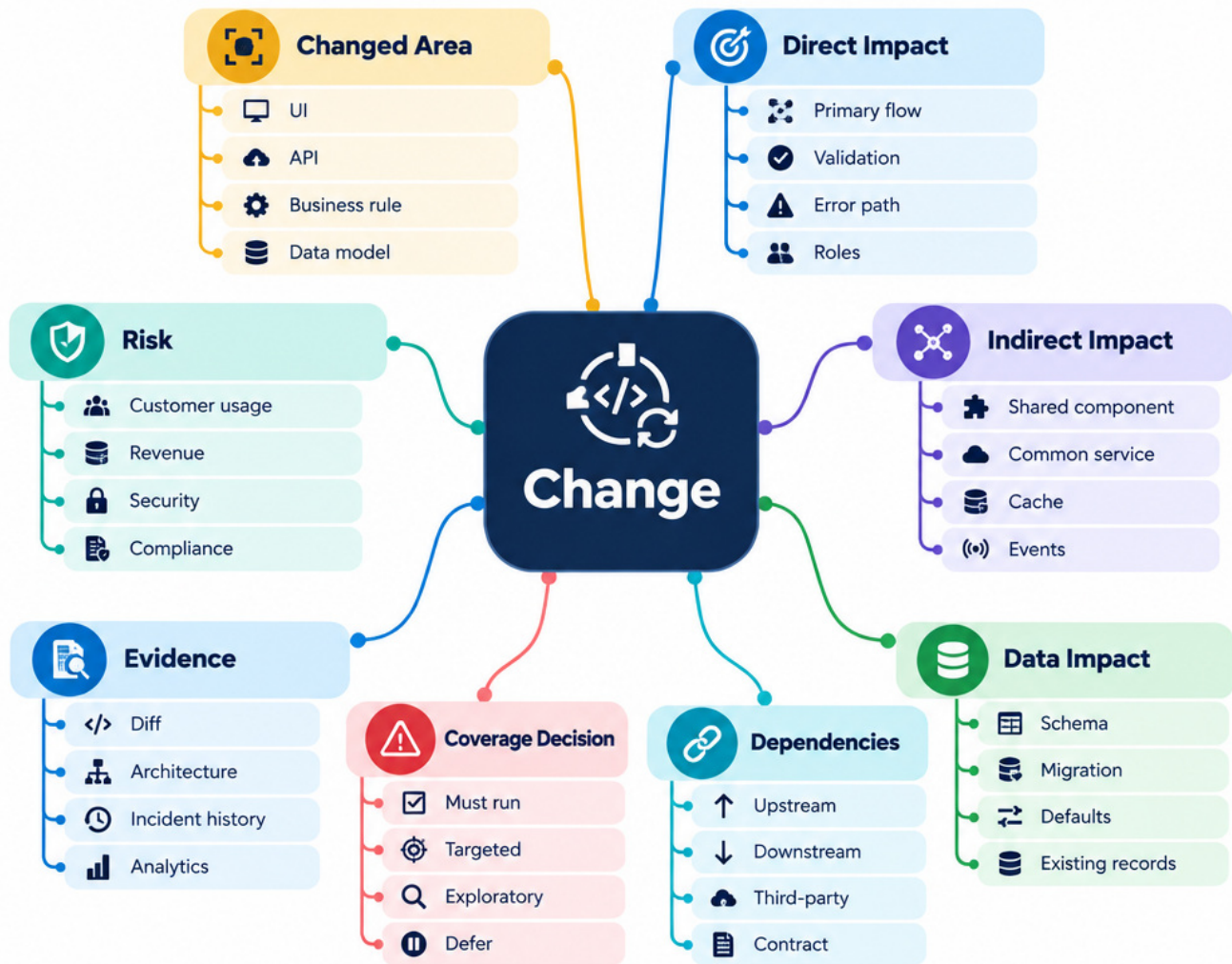


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Change Impact to Test Coverage Map

Turn code or requirement changes into focused regression



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Automation Strategy and Architecture

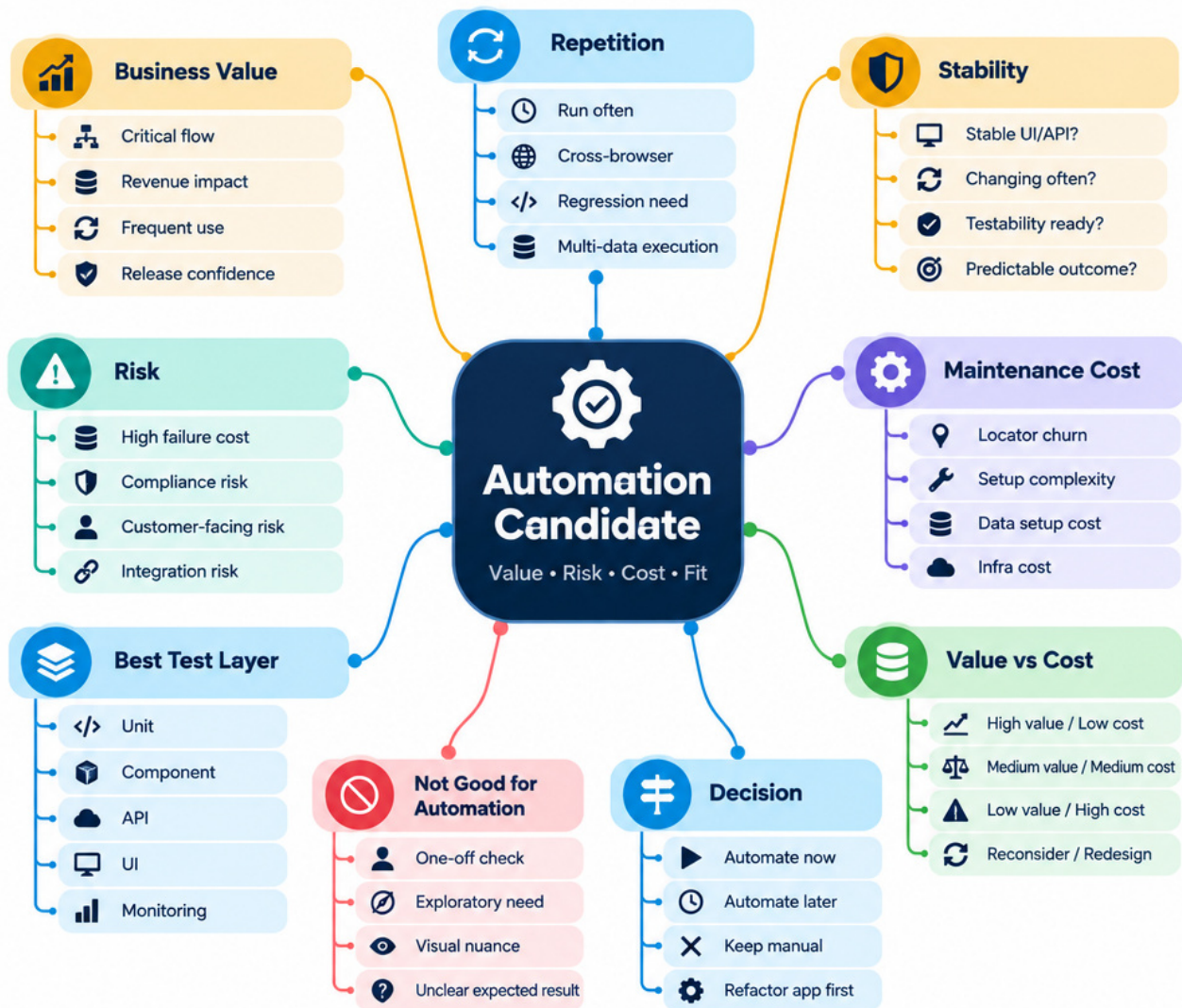
Make better automation choices across scope, architecture, isolation, maintenance cost, and test-layer placement.

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What Should I Automate? Decision Map

Choose automation where it creates real value

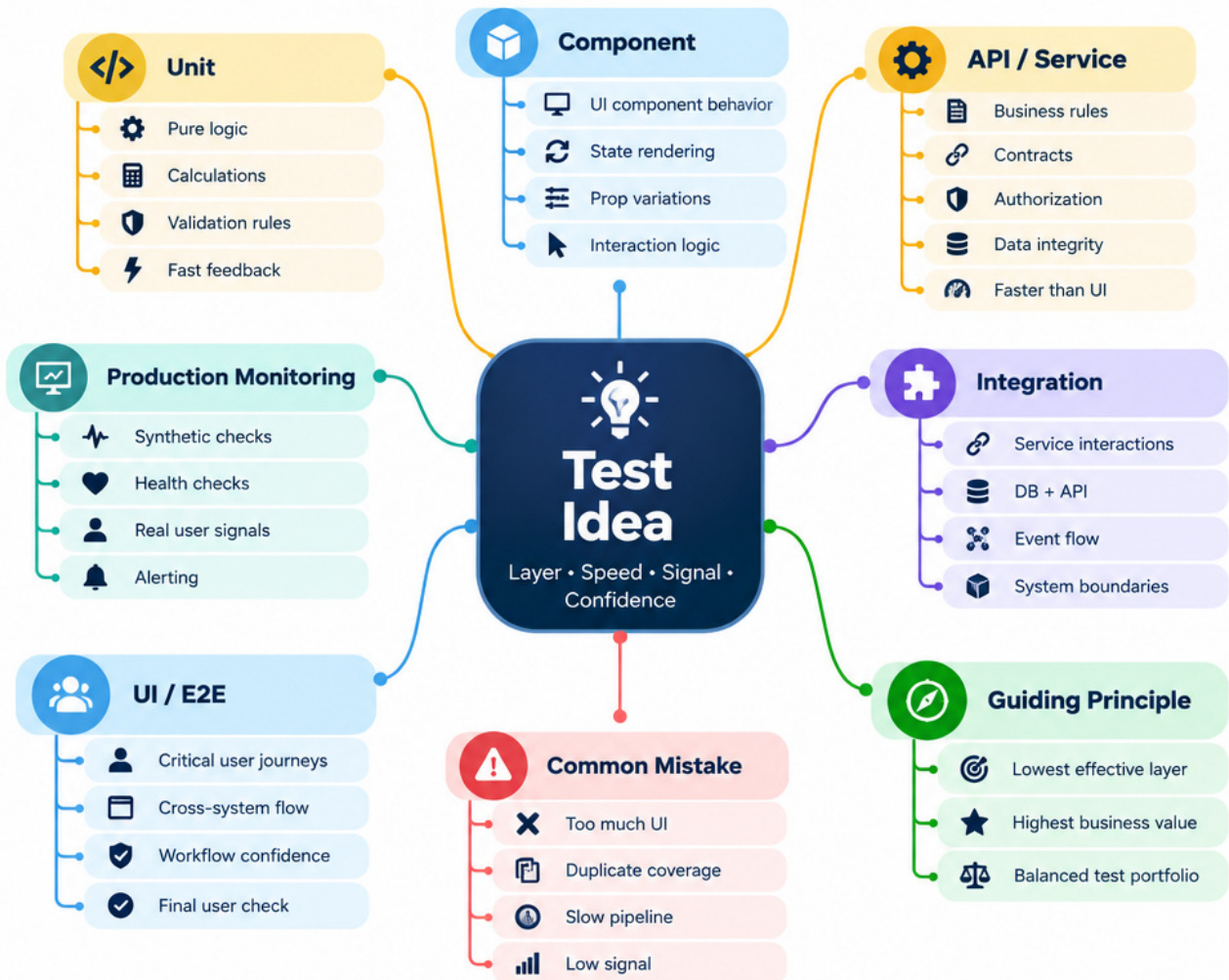


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Where Should This Test Live?

Choose the right test layer for speed, value, and confidence



Automation Maintenance Decision Map

When a test hurts more than it helps, decide wisely

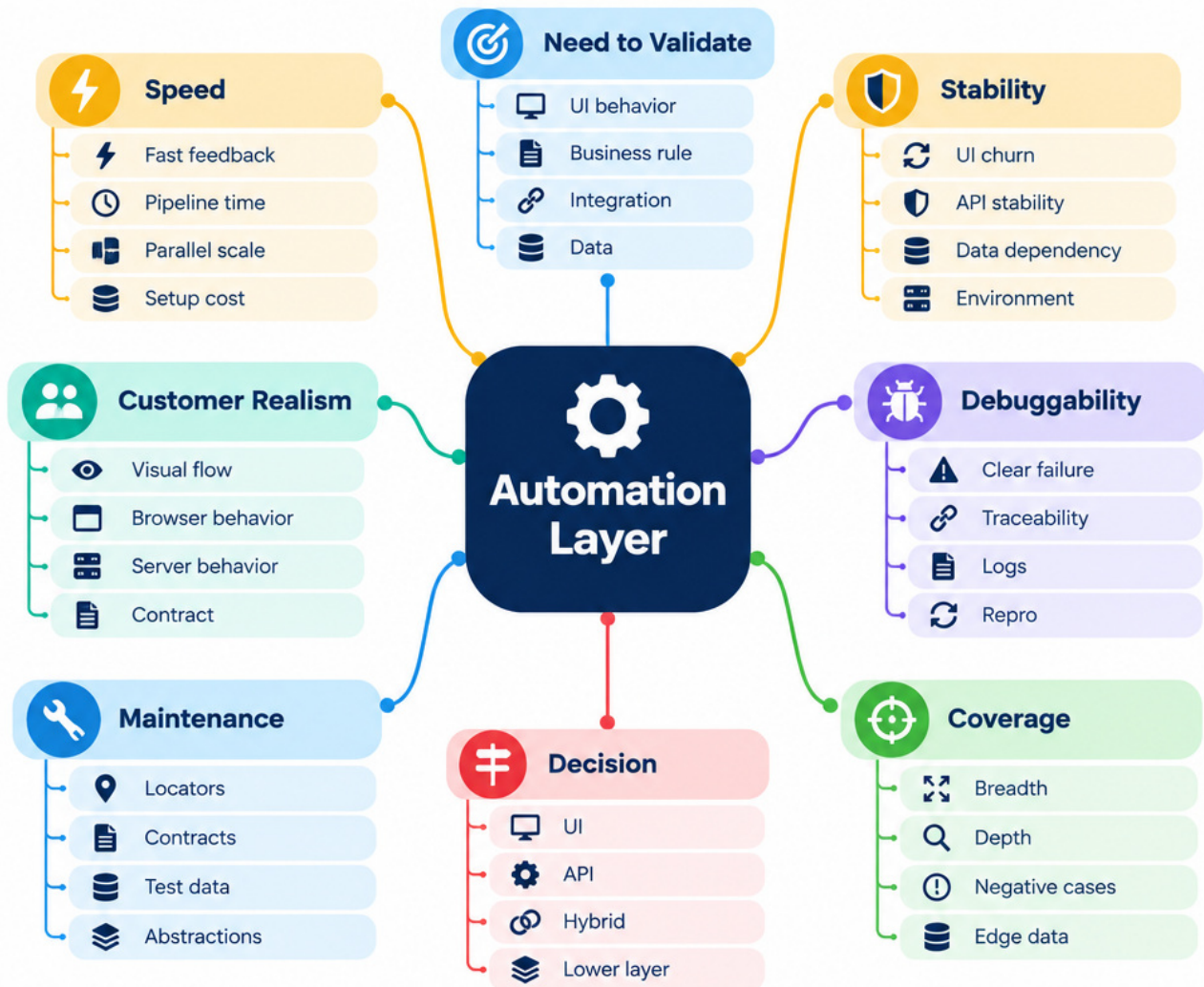


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UI vs API Automation Decision Map

Choose the layer that gives the strongest signal for the lowest cost

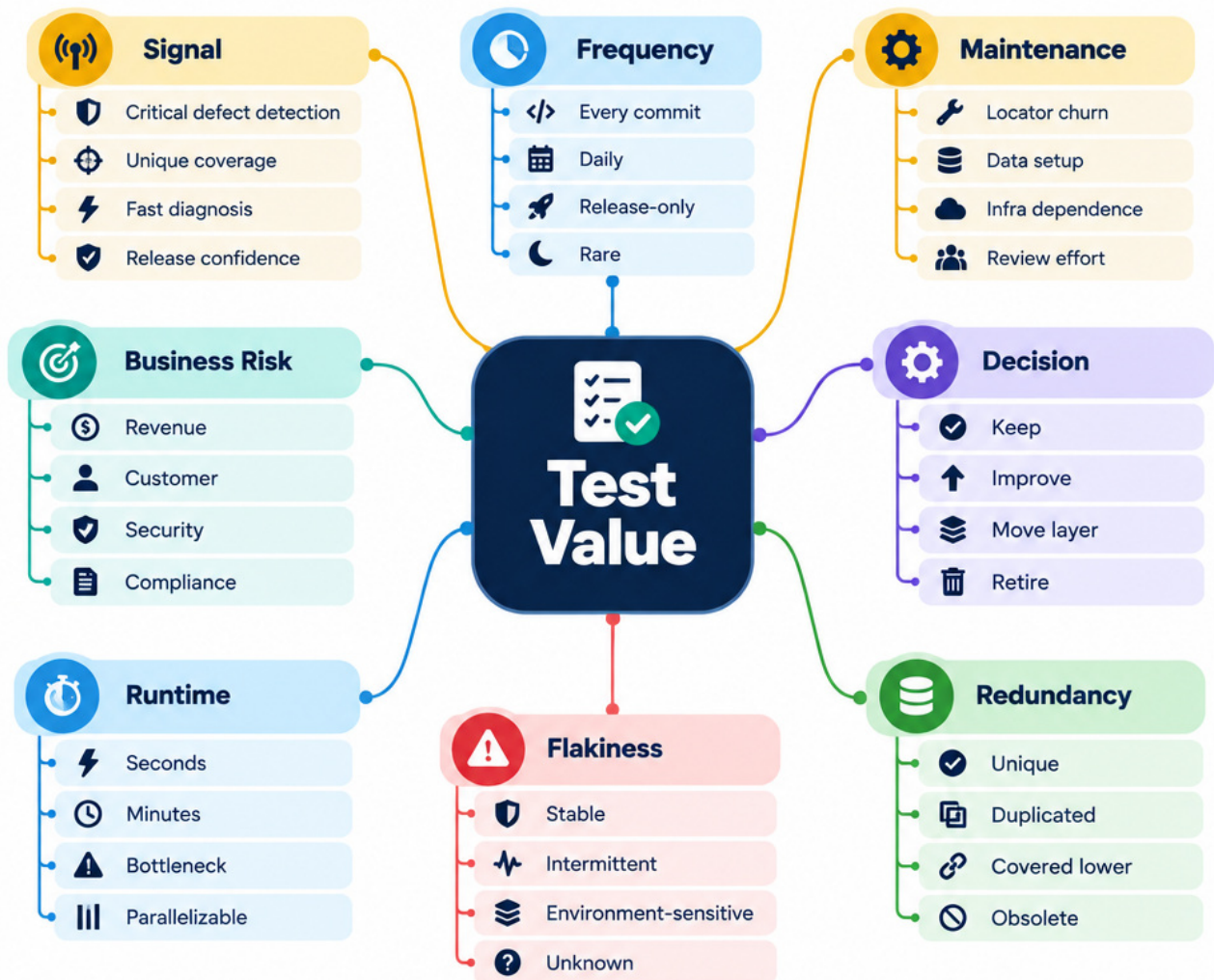


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Automation Signal vs Maintenance Cost Map

Keep tests that earn their place in the suite

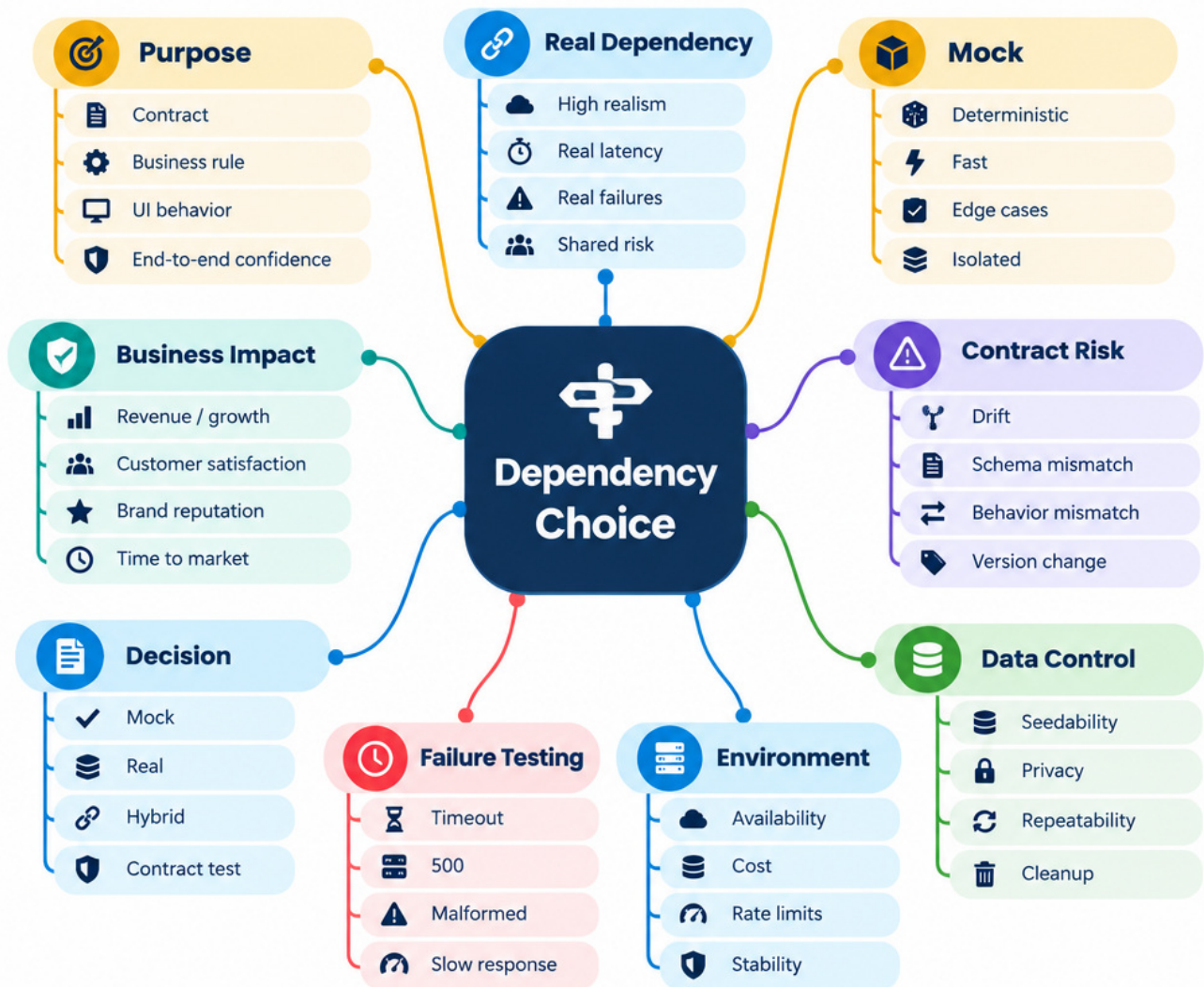


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Mock vs Real Dependency Decision Map

Balance realism, control, speed, and failure coverage

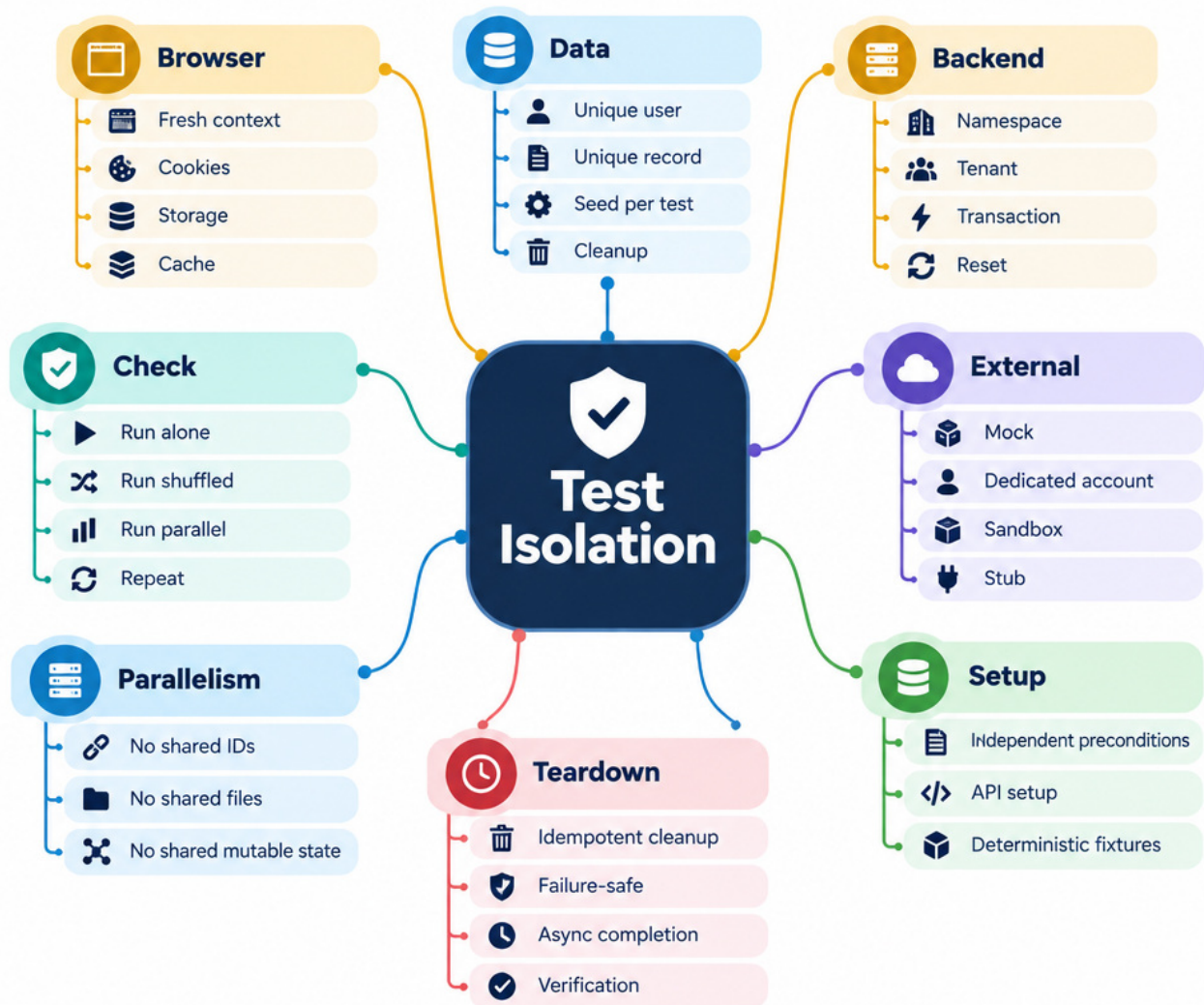


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Test Isolation Design Map

Design tests so one run cannot poison another

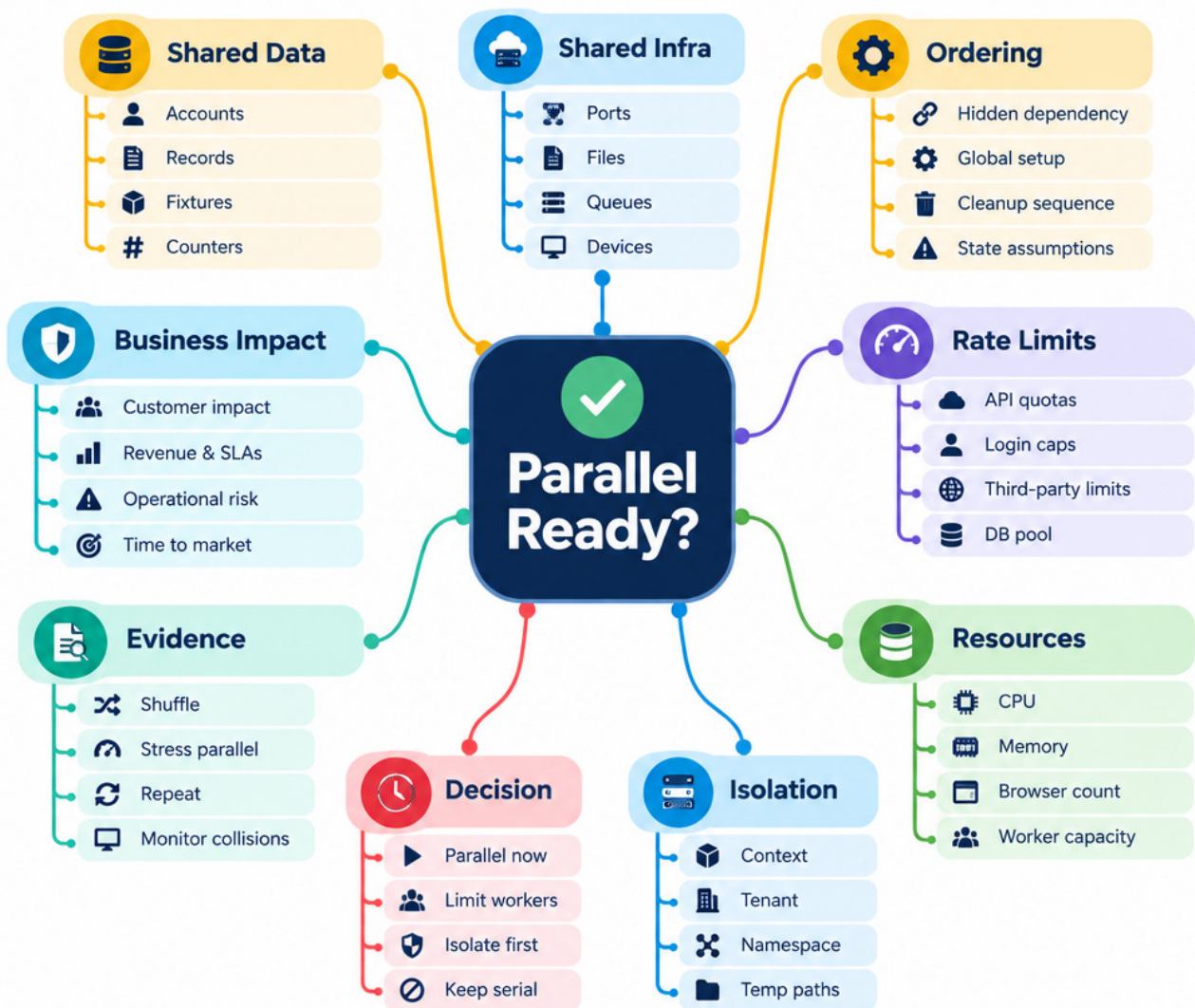


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Parallel Execution Readiness Map

Know when a suite is truly safe to run concurrently

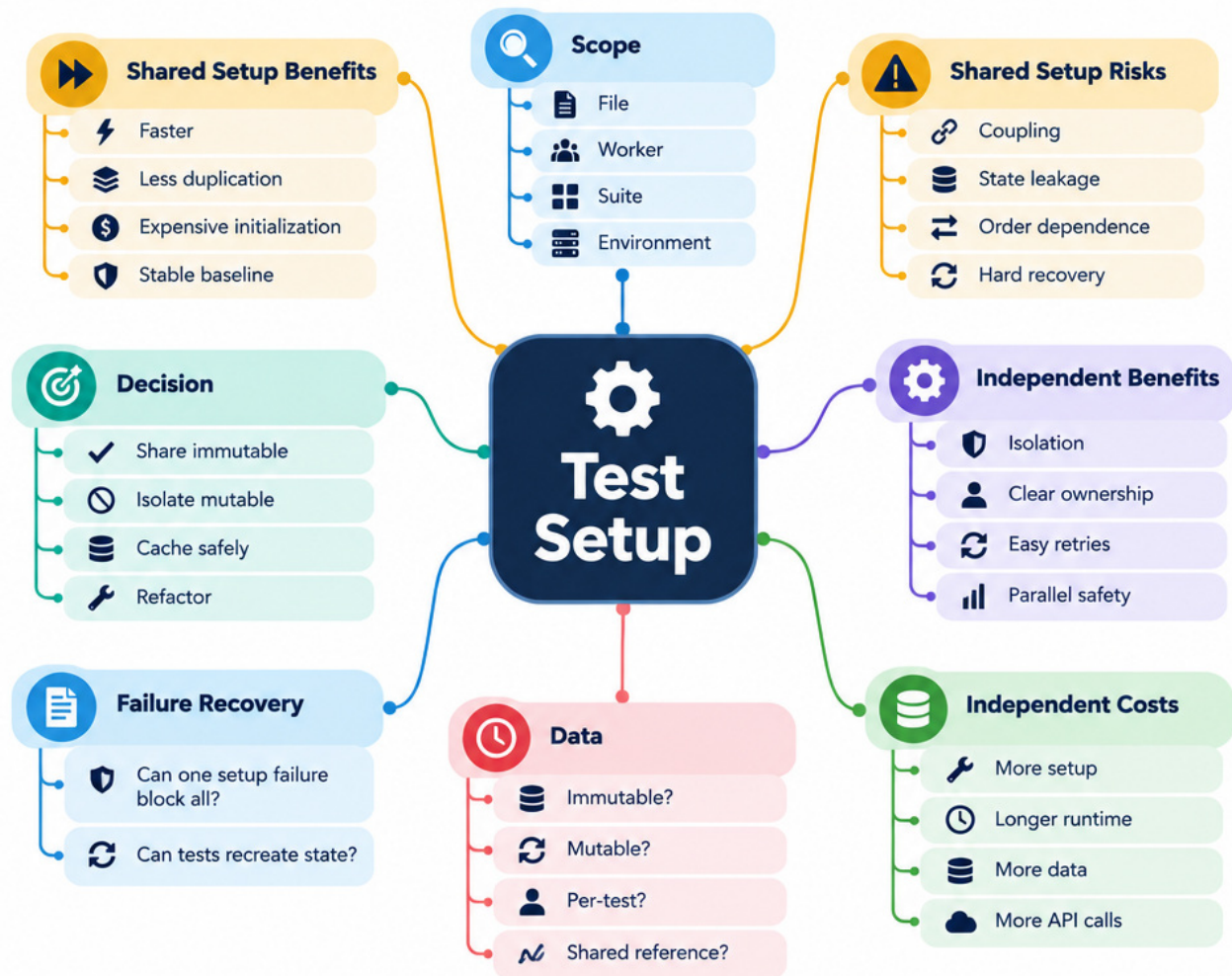


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Shared Setup vs Independent Setup Decision Map

Choose convenience without creating hidden coupling



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Keep, Refactor, Replace or Delete Test Map

Make maintenance decisions based on signal, not attachment



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04

Playwright Engineering Decisions

Apply practical engineering judgment to Playwright locators, waiting, fixtures, state, parallelism, tracing, and abstractions.

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Playwright Locator Selection Decision Map

Choose resilient locators that reflect how users interact



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Playwright Waiting Strategy Map

Wait for meaningful state instead of arbitrary time

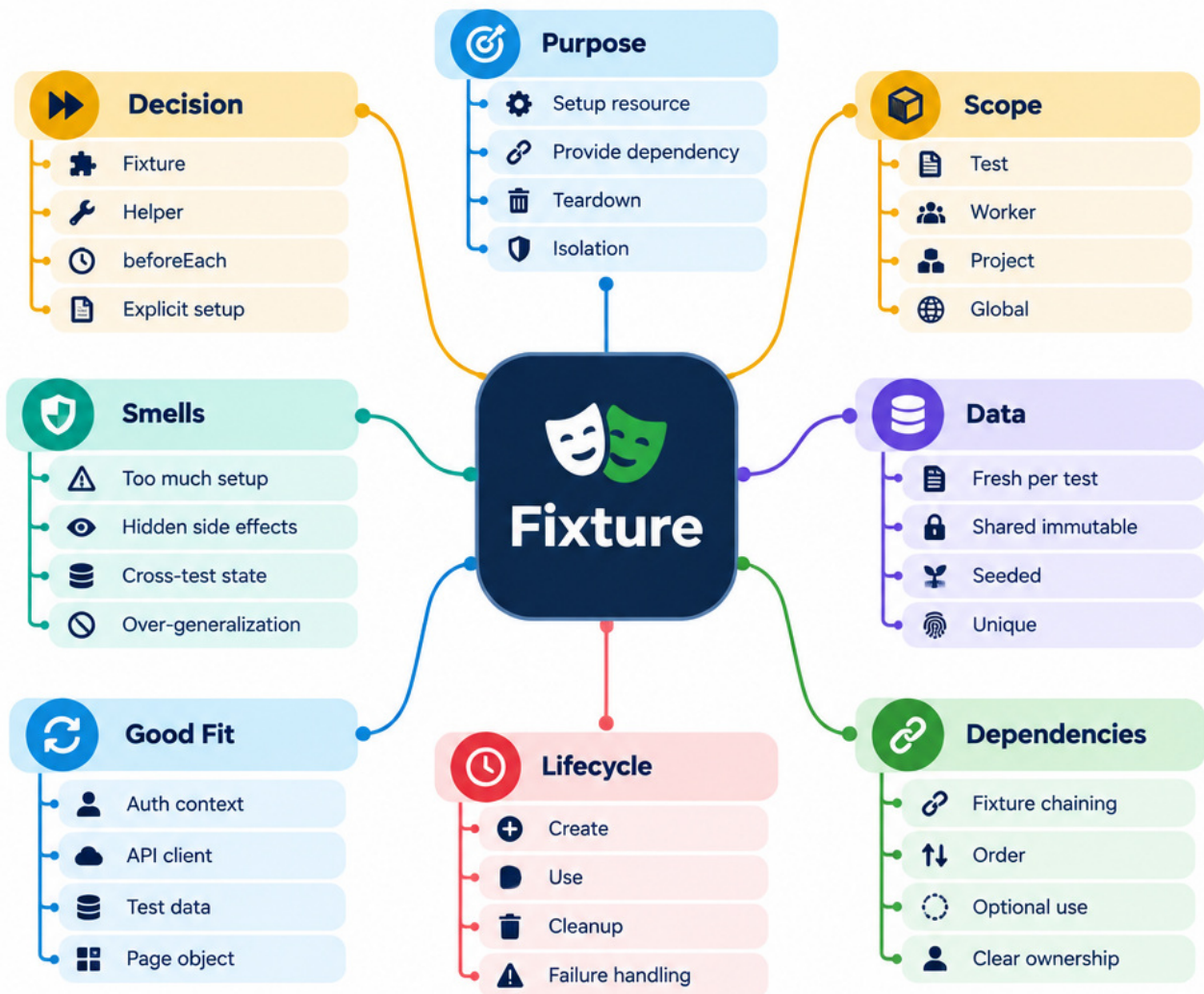


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Playwright Fixture Design Map

Use fixtures to express reusable test context without hidden magic

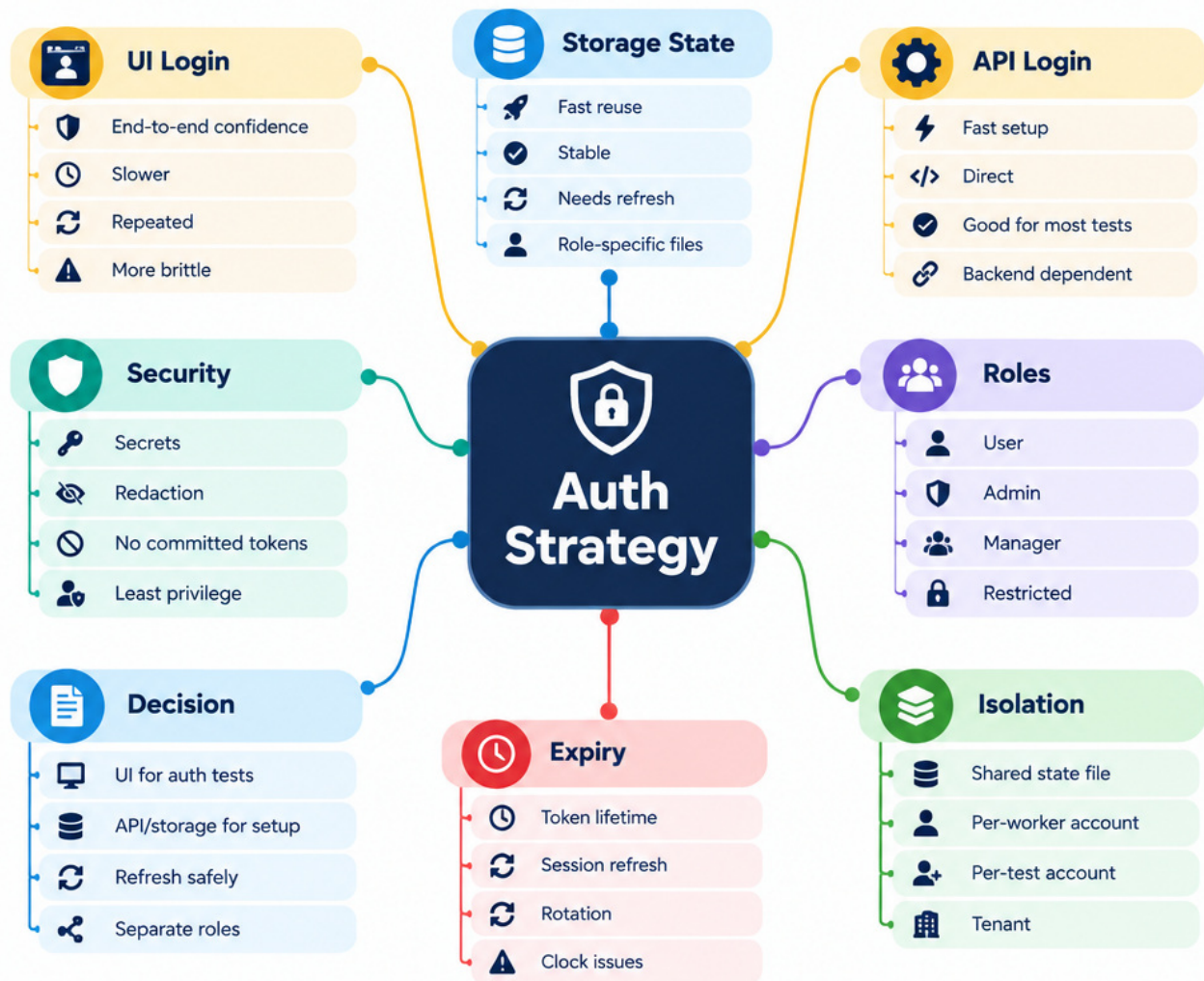


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Authentication State Strategy Map

Choose how tests log in without making auth the bottleneck

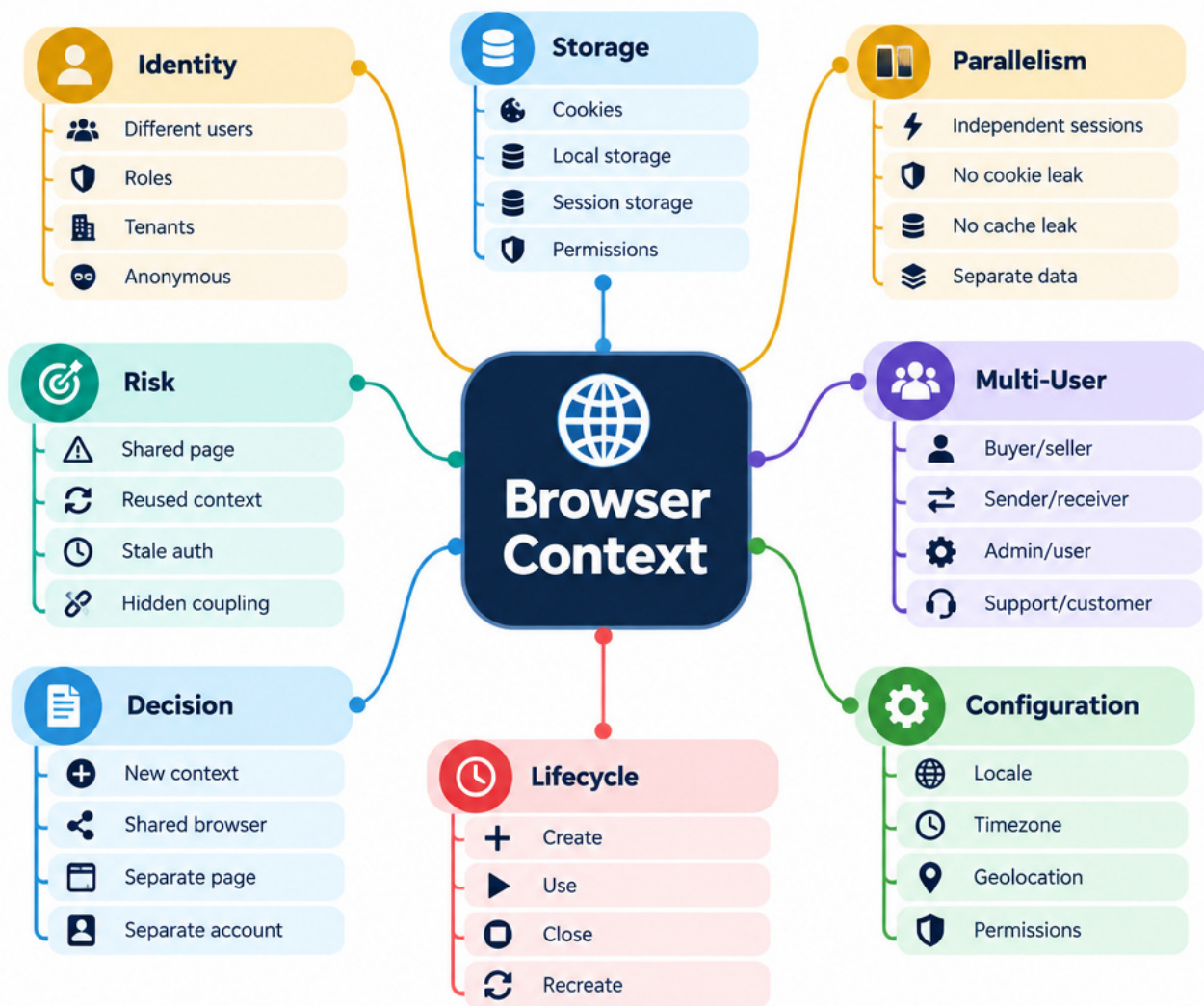


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Browser Context Isolation Map

Use browser contexts to separate identity, storage, and state



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Worker & Parallelism Decision Map

Tune concurrency without trading speed for instability

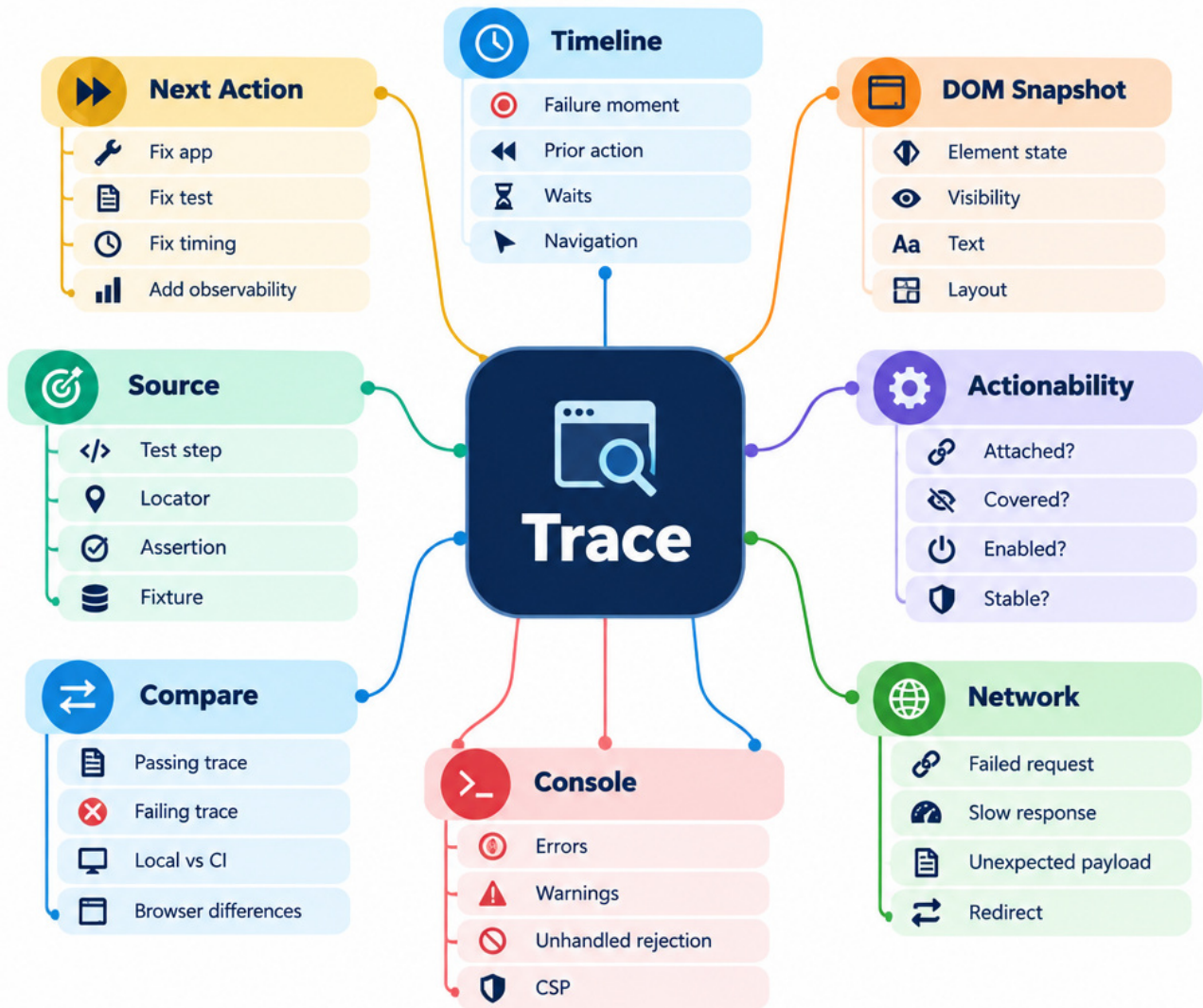


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Playwright Trace Investigation Map

Turn trace data into a structured debugging workflow



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Network Mocking Decision Map

Use mocks where control matters without losing contract confidence



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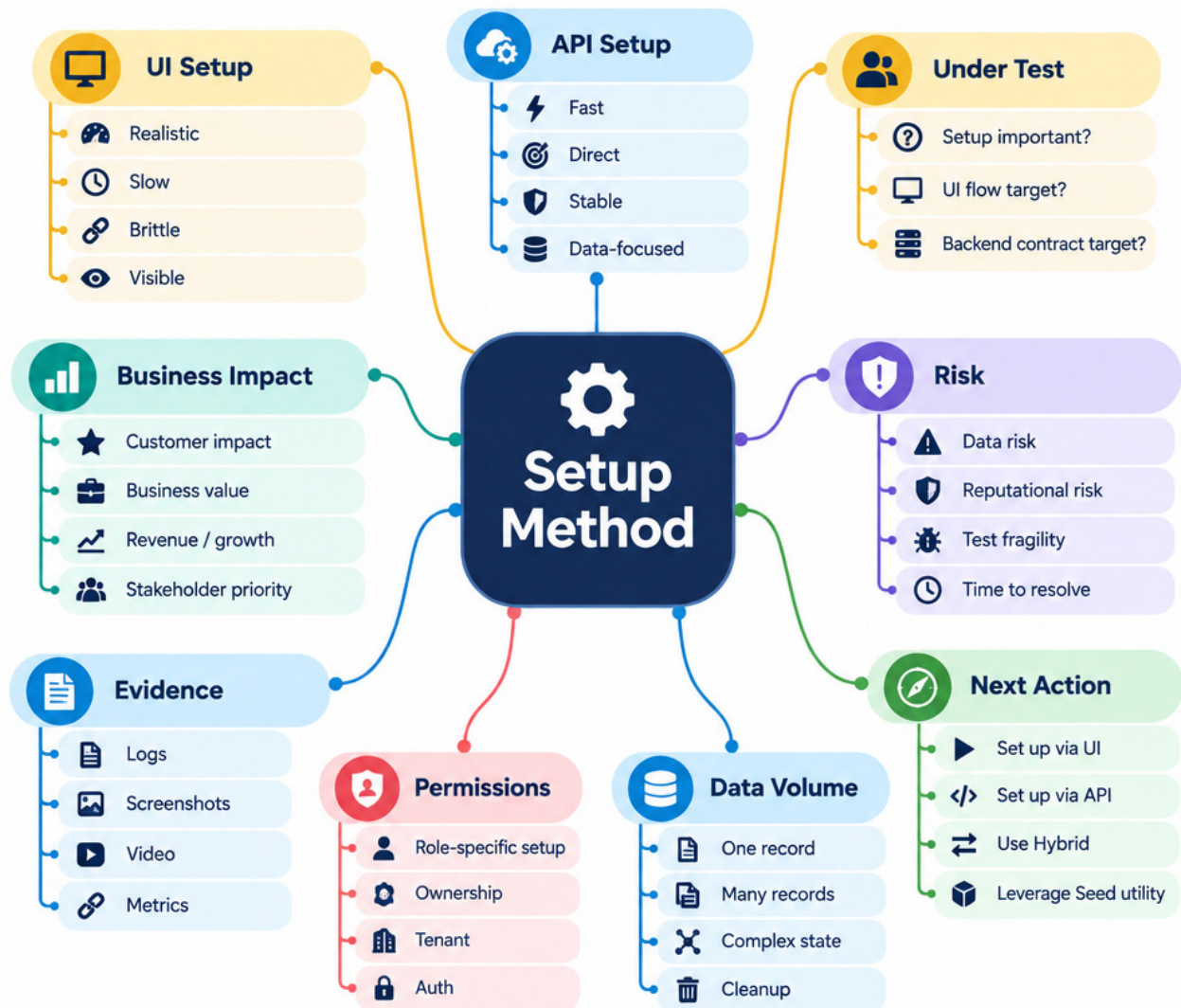
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UI Setup vs API-Assisted Setup Map

Prepare state efficiently without losing the behavior under test

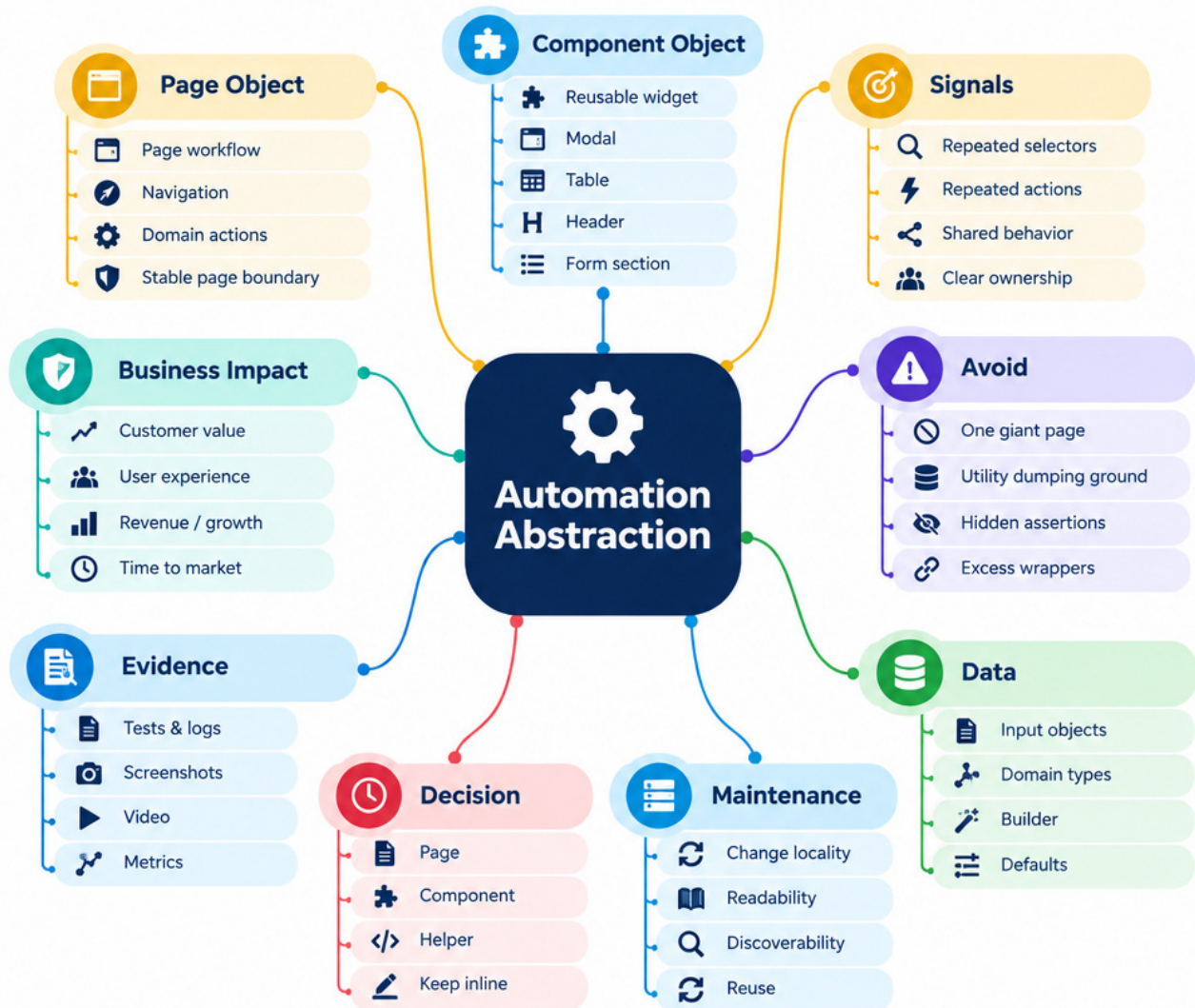


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Page Object vs Component Abstraction Map

Choose abstractions that match product structure and change patterns



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05

API and Integration Quality

Evaluate API contracts, access boundaries, consistency, failure handling, throttling, dependencies, and compatibility.

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API Failure Investigation Map

Troubleshoot API problems with structure and speed



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API Contract Risk Discovery Map

Find where API changes can silently break consumers

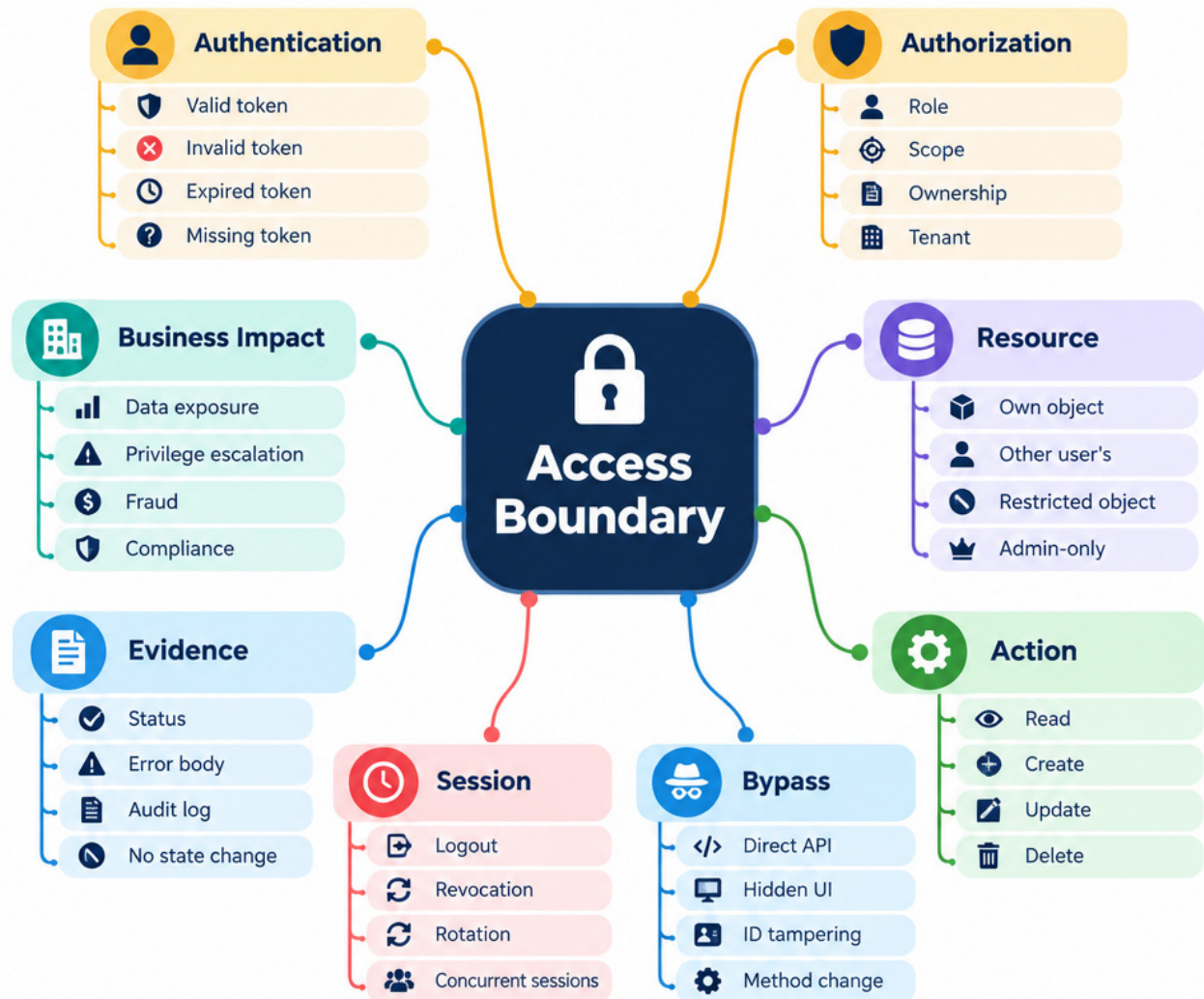


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Authentication & Authorization Boundary Map

Test identity and permission boundaries as separate problems



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Idempotency Testing Map

Verify repeat requests do not create unintended side effects



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Pagination, Filtering & Sorting Test Map

Test list APIs beyond the first happy-path page



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API Error Response Quality Map

Evaluate whether failures help clients recover safely

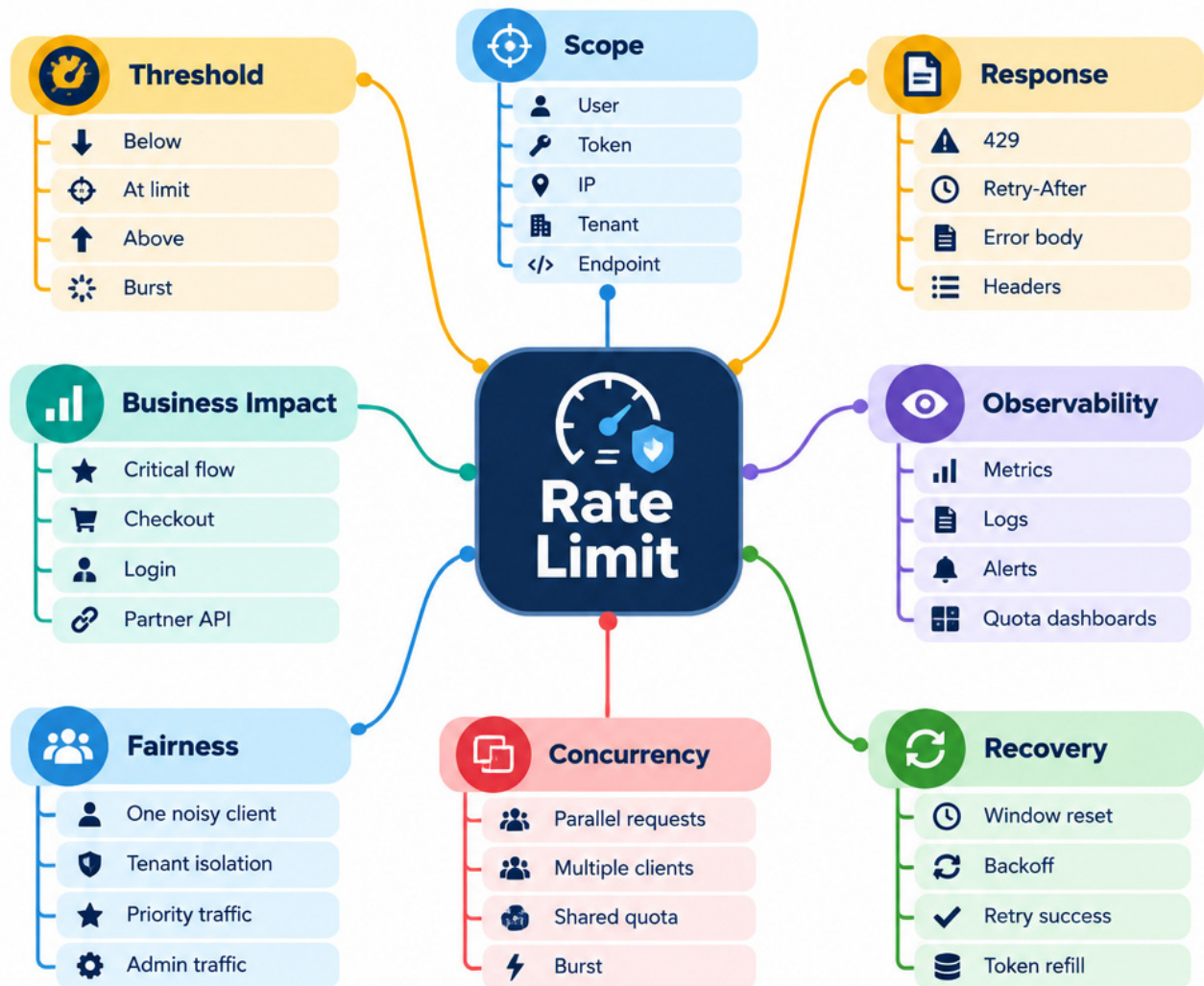


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Rate Limit & Throttling Test Map

Test how APIs protect capacity without confusing clients



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Eventual Consistency Test Map

Test systems where correct state appears later, not instantly

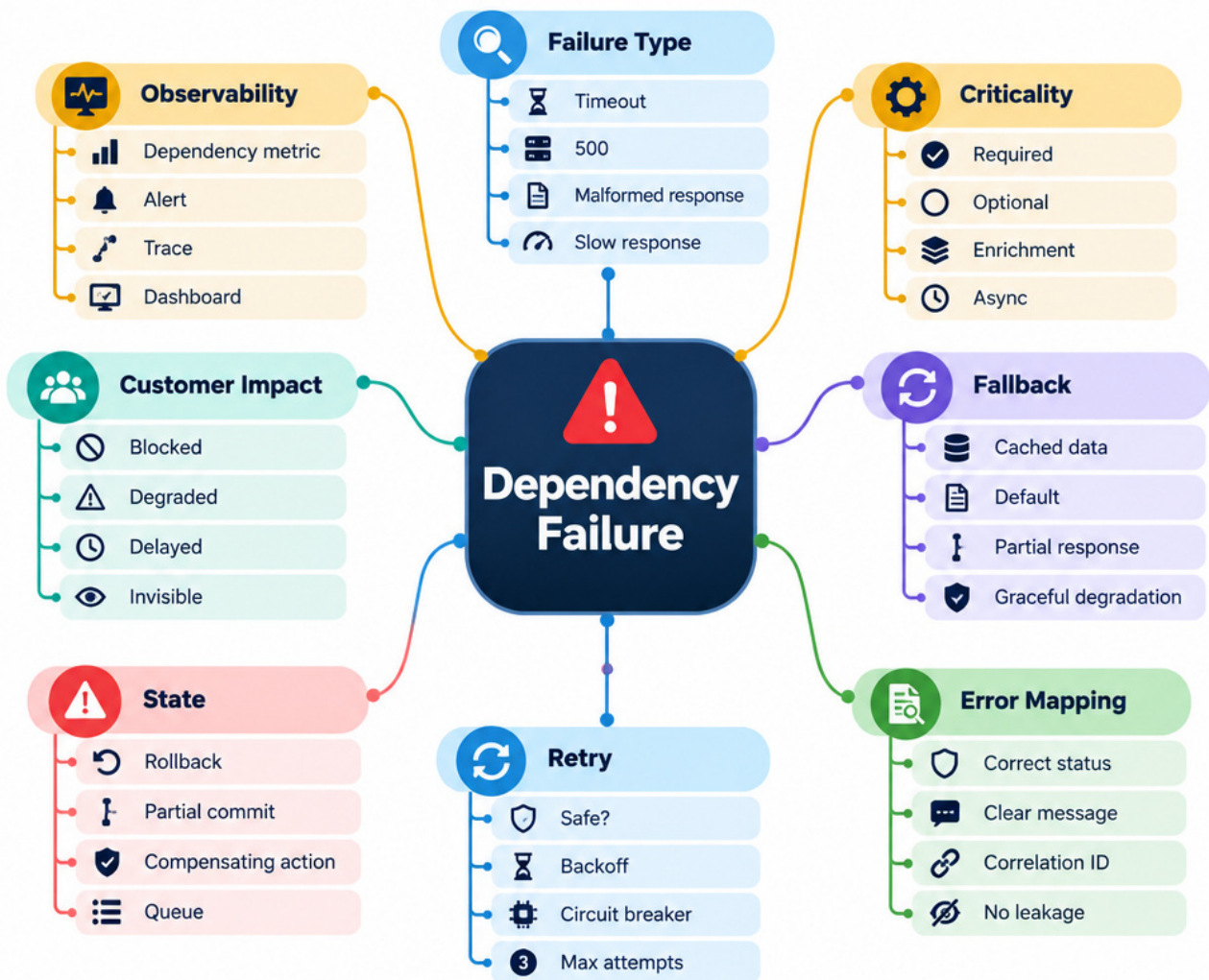


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Downstream Dependency Failure Map

Test how your API behaves when another service fails

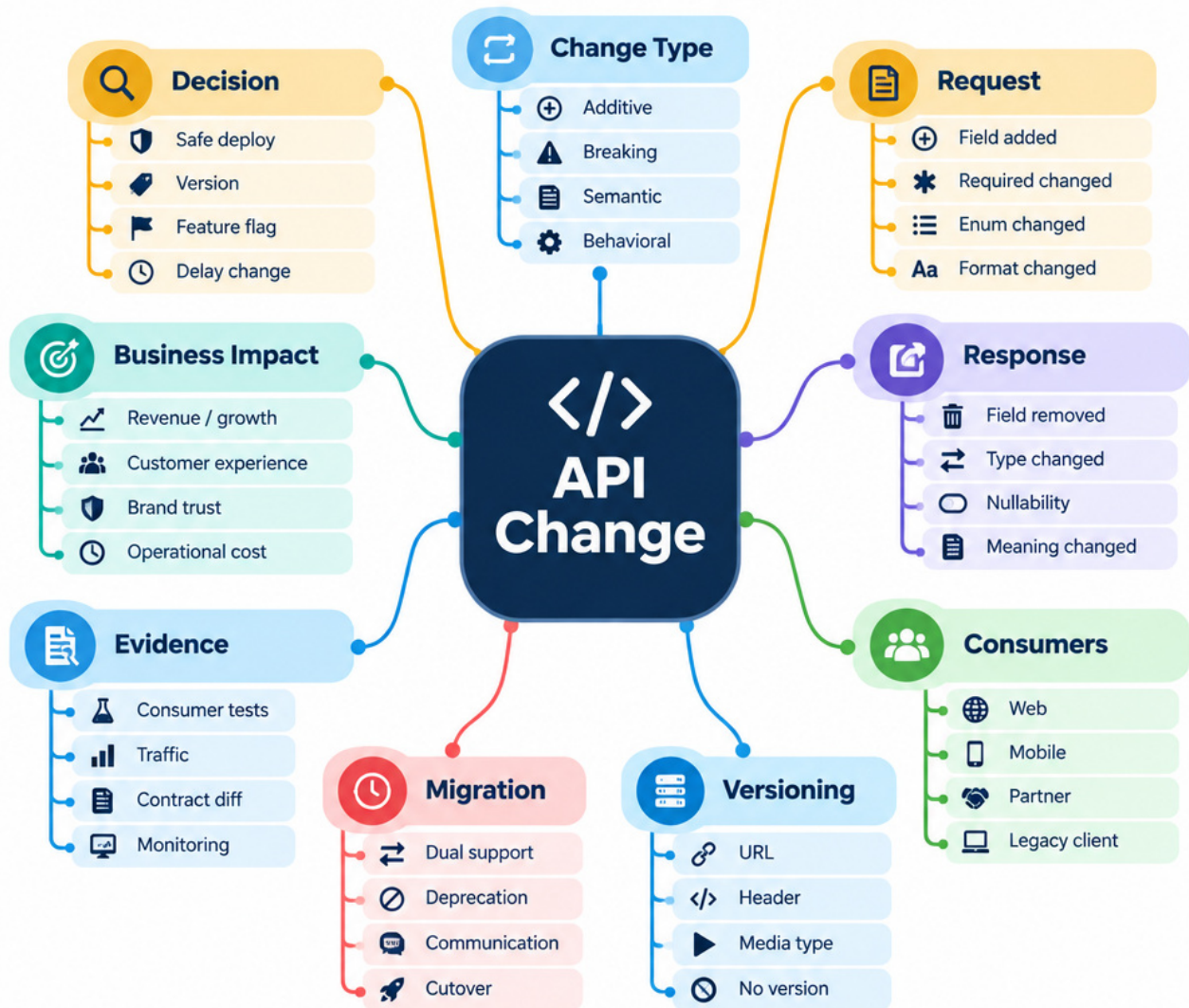


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API Version & Change Impact Map

Assess compatibility before changing a live contract



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06

AI and LLM Quality Engineering

Test AI and LLM systems for correctness, grounding, safety, variability, evaluation quality, and responsible tool use.

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AI Answer Evaluation Map for Testers

Review AI responses beyond just looks good



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Hallucination Investigation Map

Find why an AI answer sounds confident but is unsupported



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RAG Retrieval Failure Diagnosis Map

Trace bad answers back to retrieval, ranking, or context assembly



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Grounding & Citation Validation Map

Check whether AI claims are actually supported by sources



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Prompt Injection Test Design Map

Test whether untrusted instructions can override intended behavior

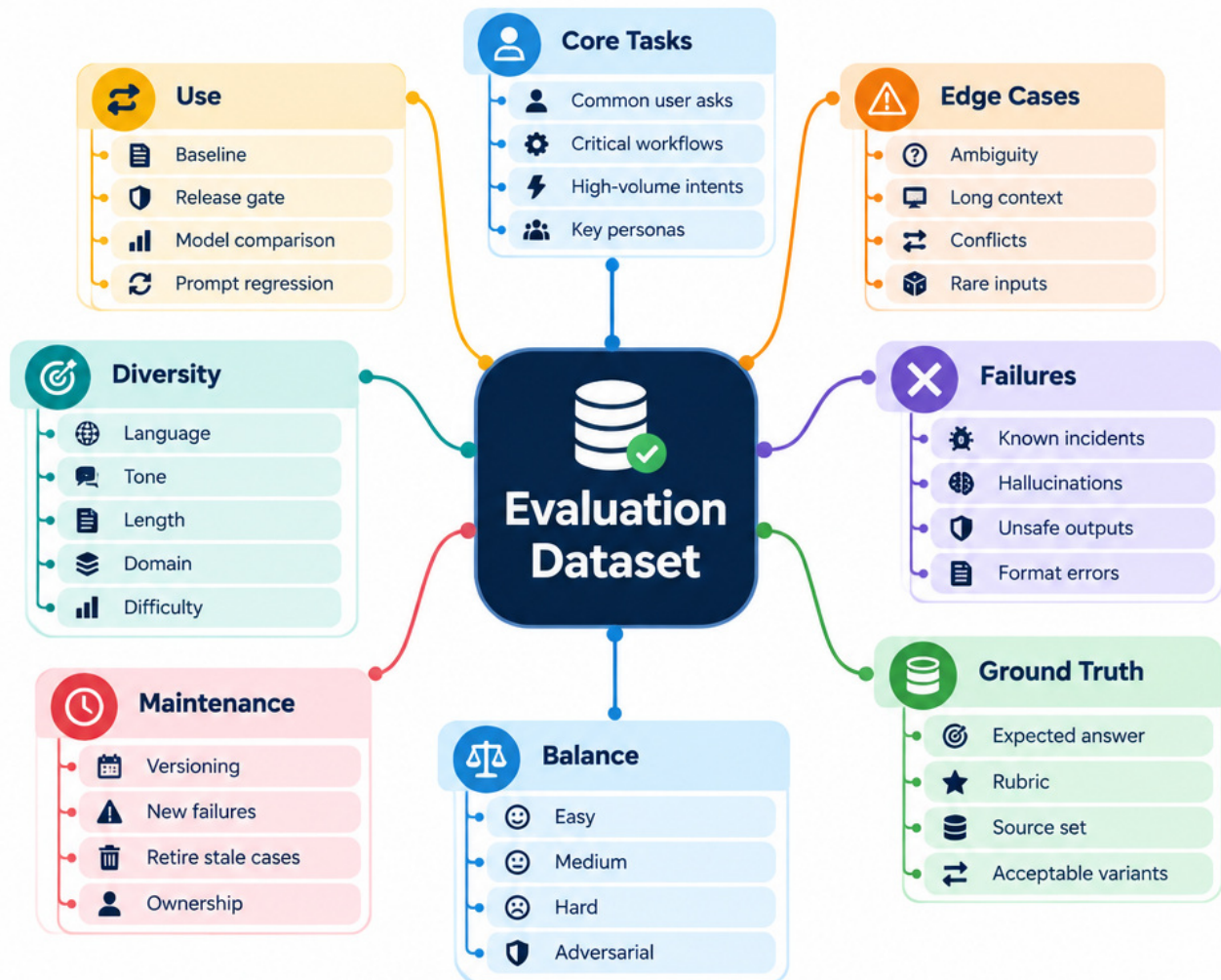


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AI Regression Dataset Design Map

Build datasets that catch meaningful quality regressions

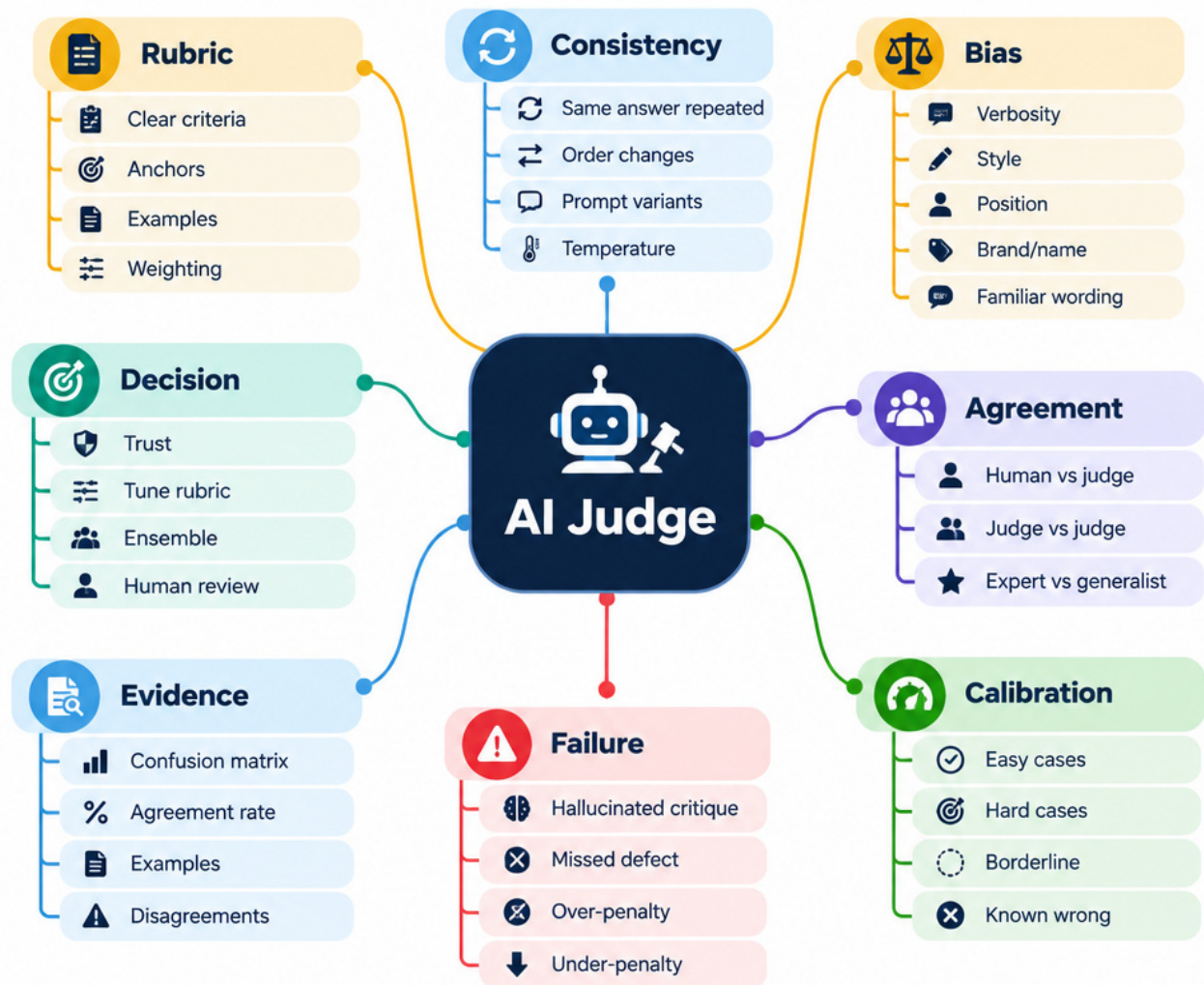


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LLM Evaluator / Judge Reliability Map

Test the evaluator before trusting the score



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Agent Tool-Use Risk Map

Evaluate whether an AI agent uses tools safely and correctly



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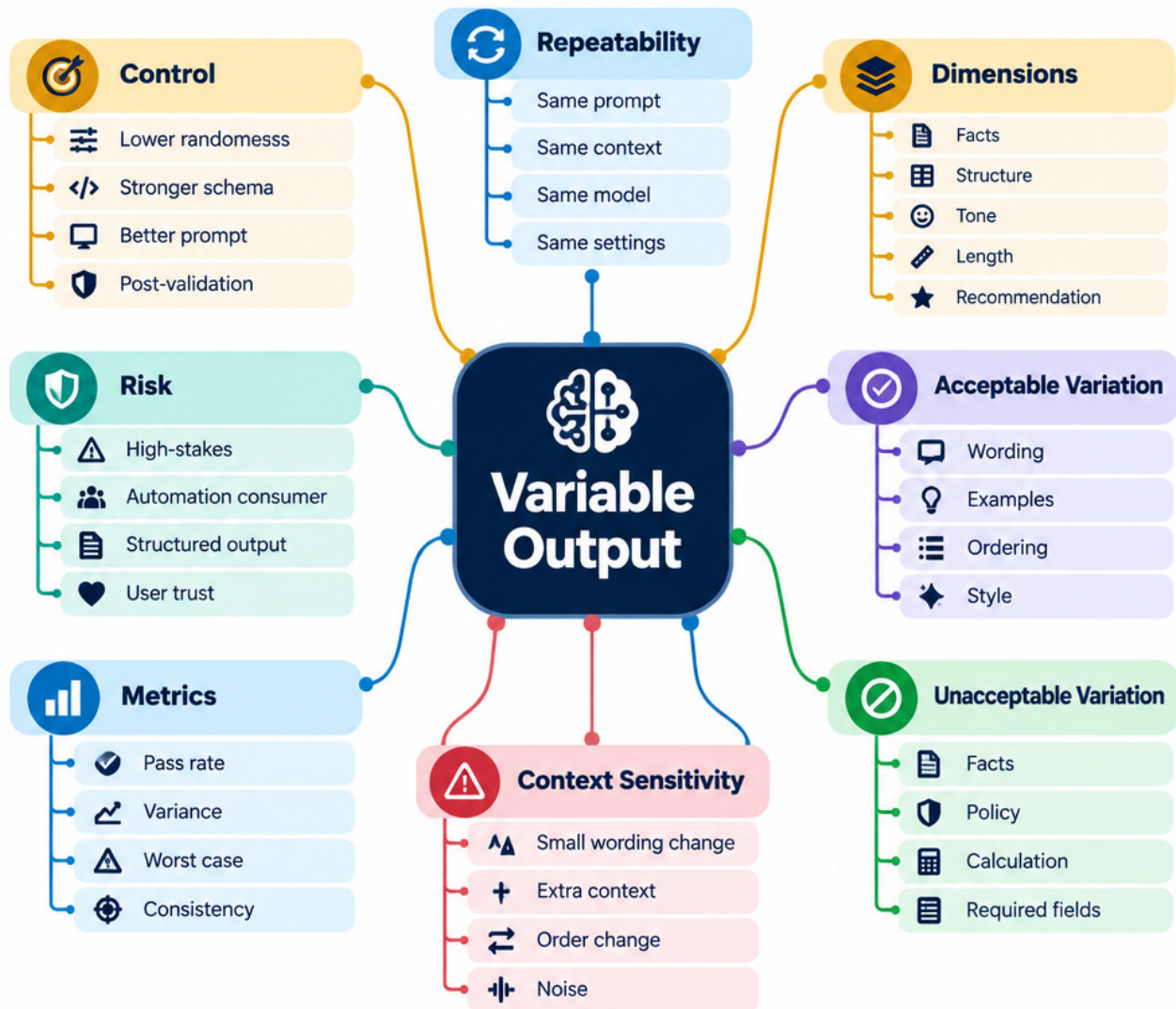
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AI Output Variability Testing Map

Measure whether variation is acceptable, useful, or risky

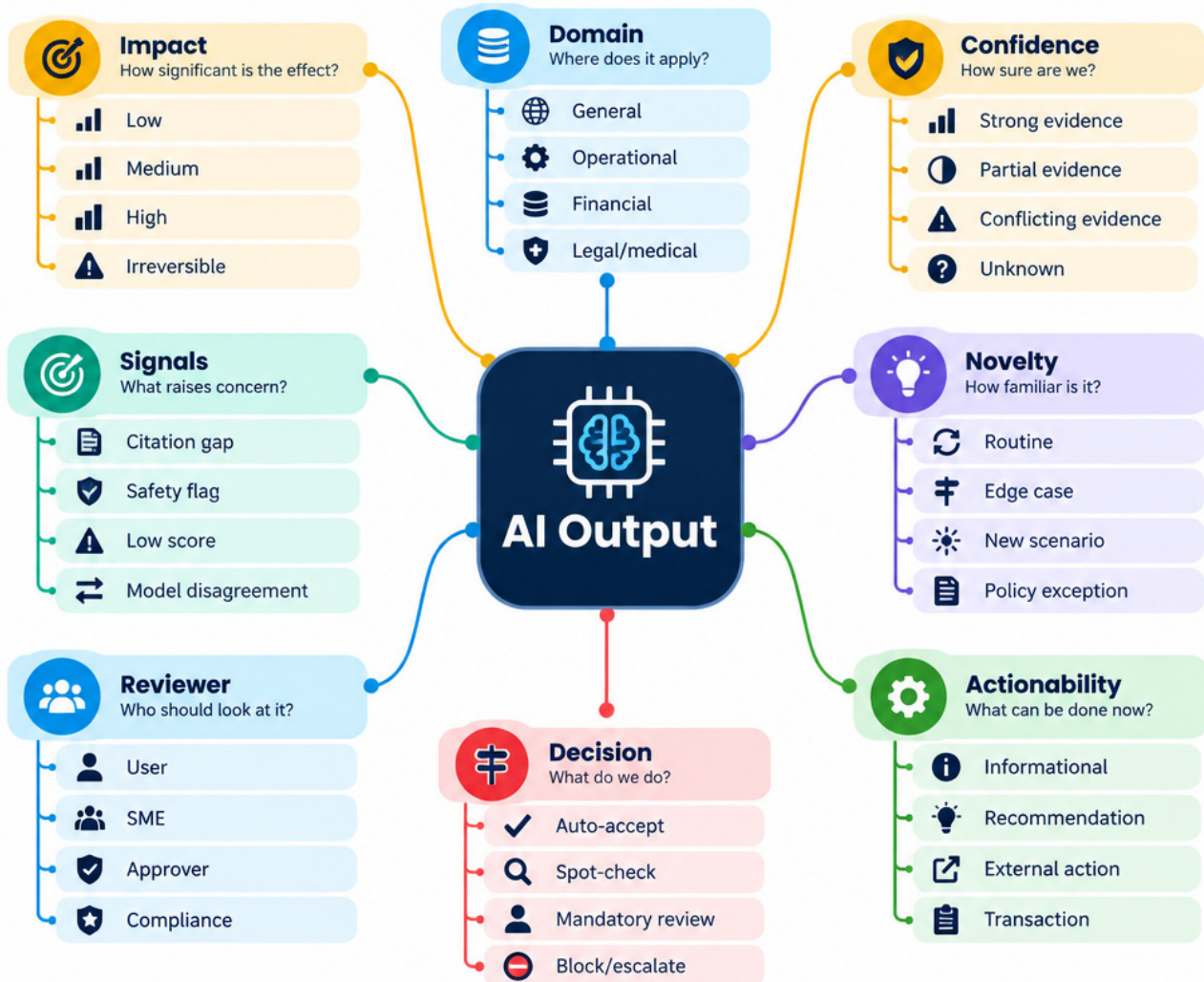


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Human Review & Escalation Decision Map

Decide when AI output needs a person before action



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07

Risk Business and Release Decisions

Connect quality evidence with customer impact, business risk, release readiness, prioritization, and decision confidence.

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Quality Risk Discovery Map

Discover what really matters before testing begins

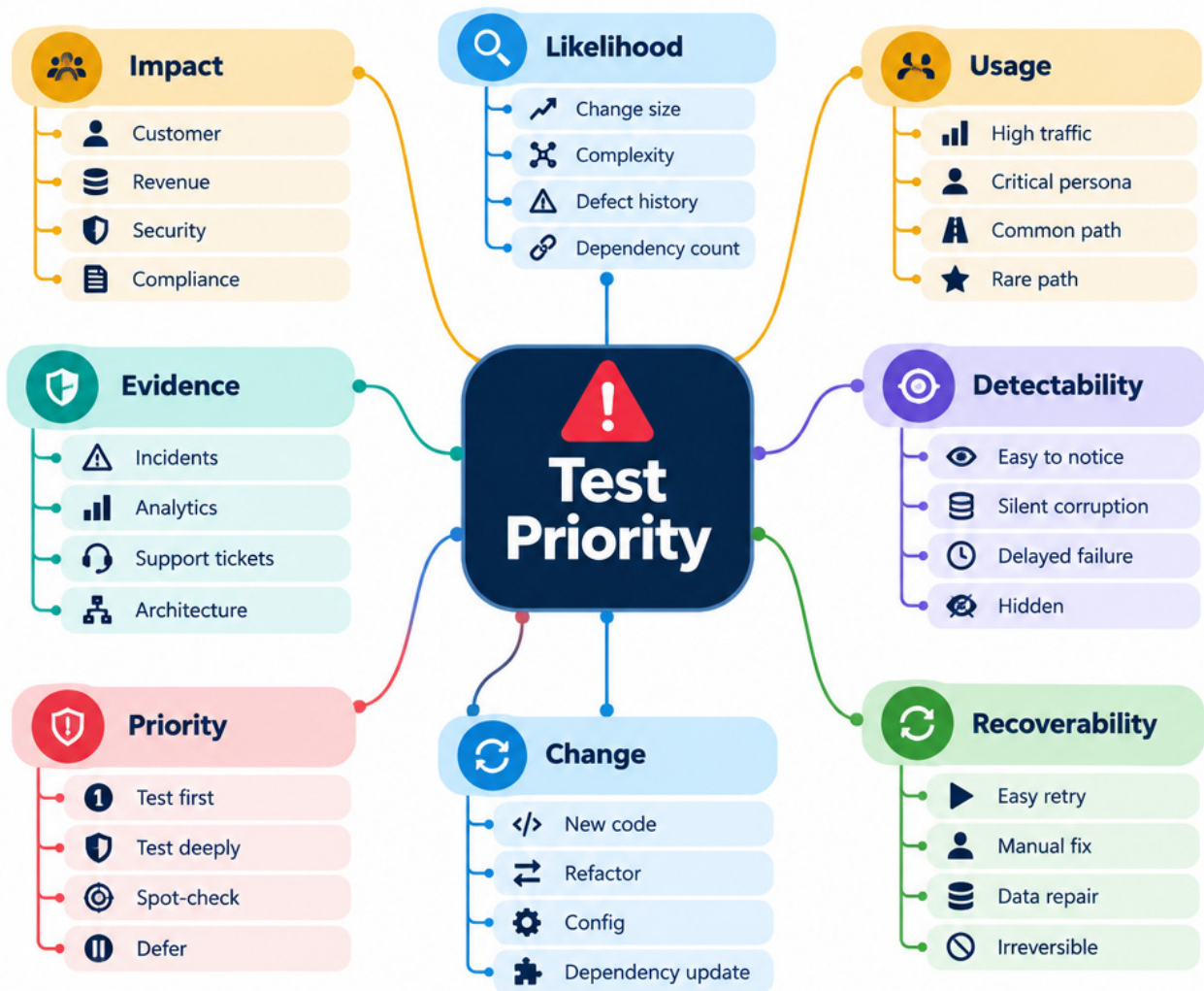


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Risk-Based Test Prioritization Map

Spend test effort where failure would matter most

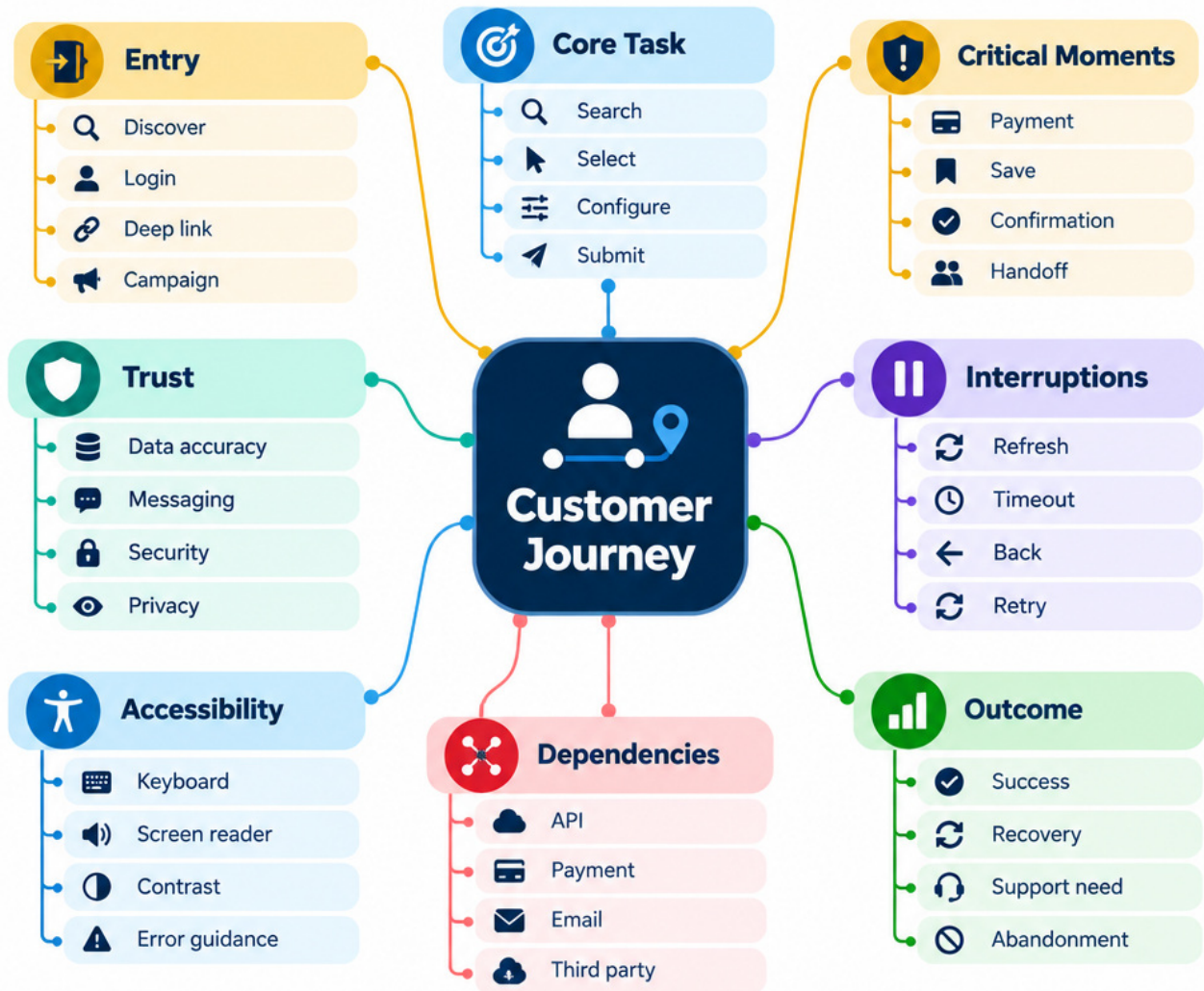


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Customer Journey Risk Map

See quality risk through the user's complete journey

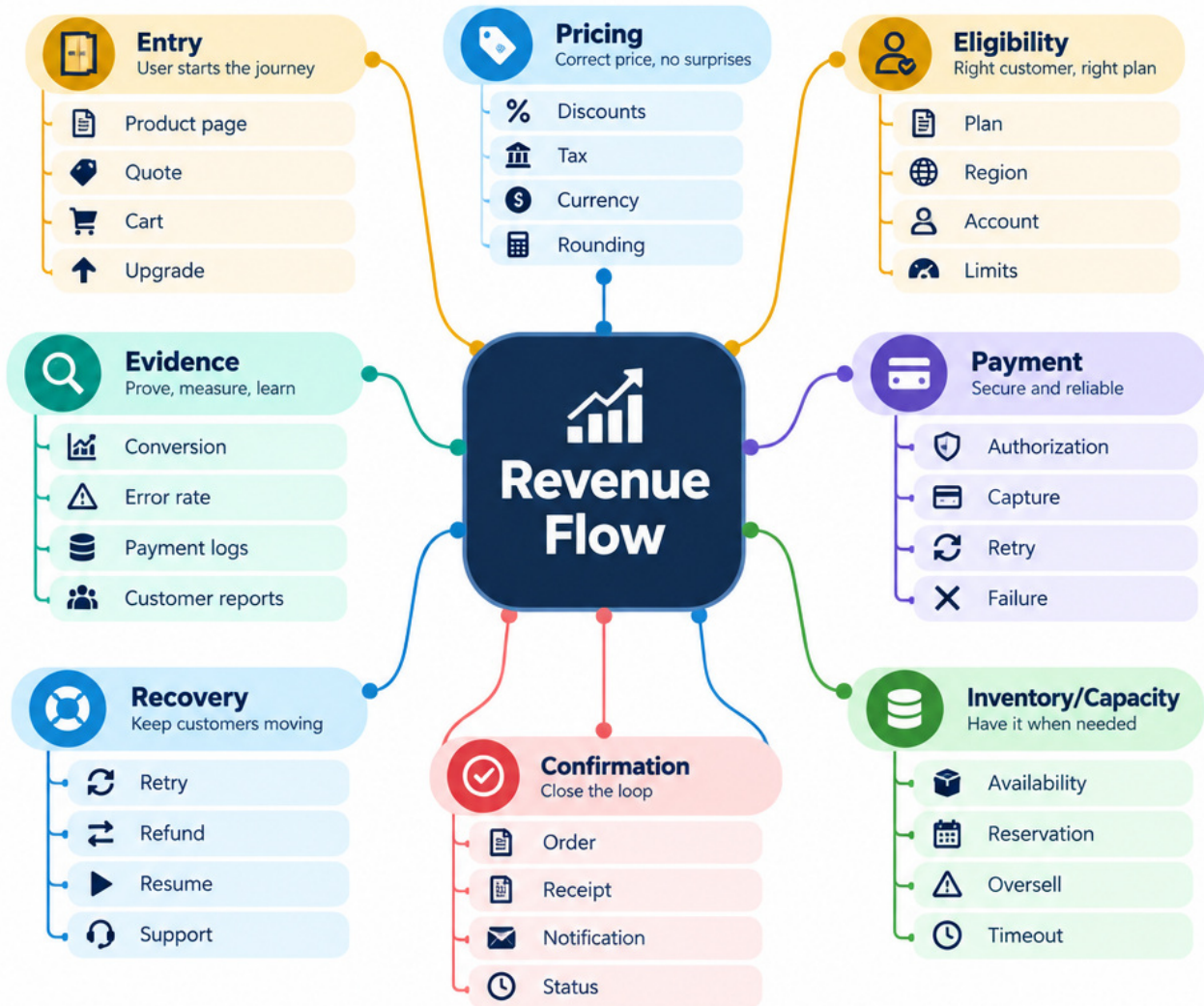


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Revenue-Critical Flow Risk Map

Focus quality effort where defects directly affect business outcomes



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Release Readiness Decision Map

Use evidence, not optimism, to decide whether to ship

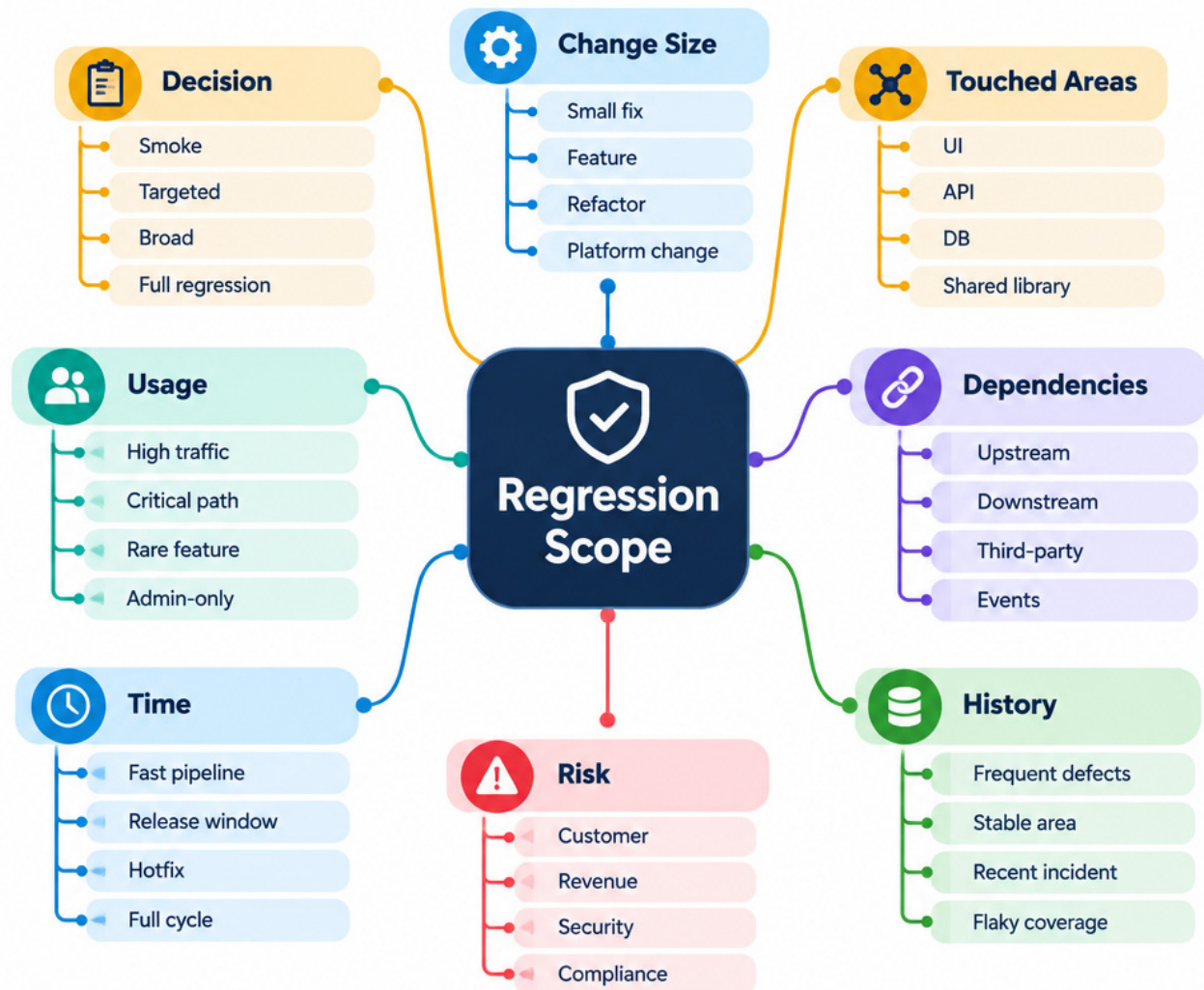


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Regression Scope Selection Map

Choose the right regression depth for the change and risk



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Should This Bug Block the Release? Map

Decide release impact using evidence and business context

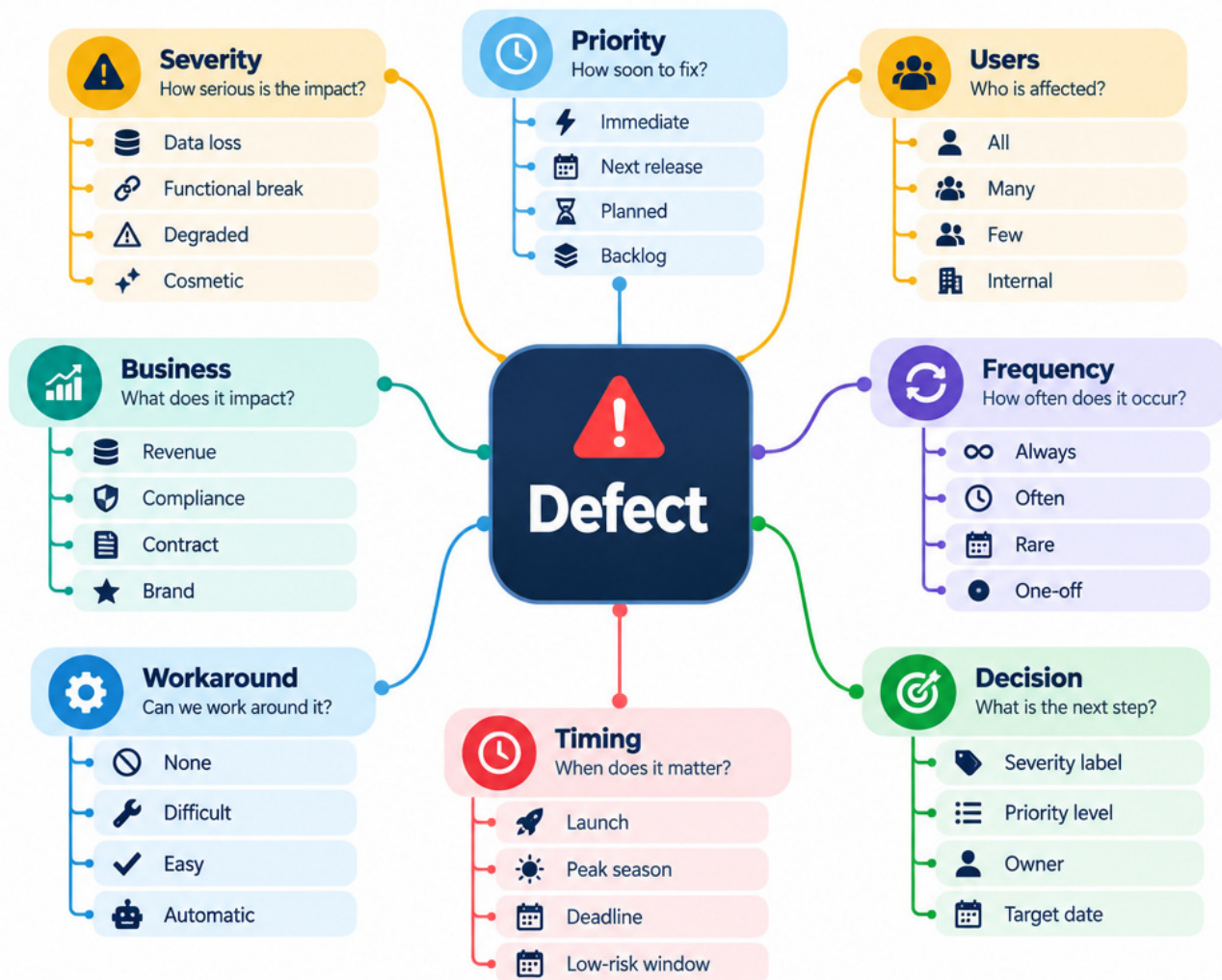


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Severity vs Priority Decision Map

Separate technical impact from business urgency

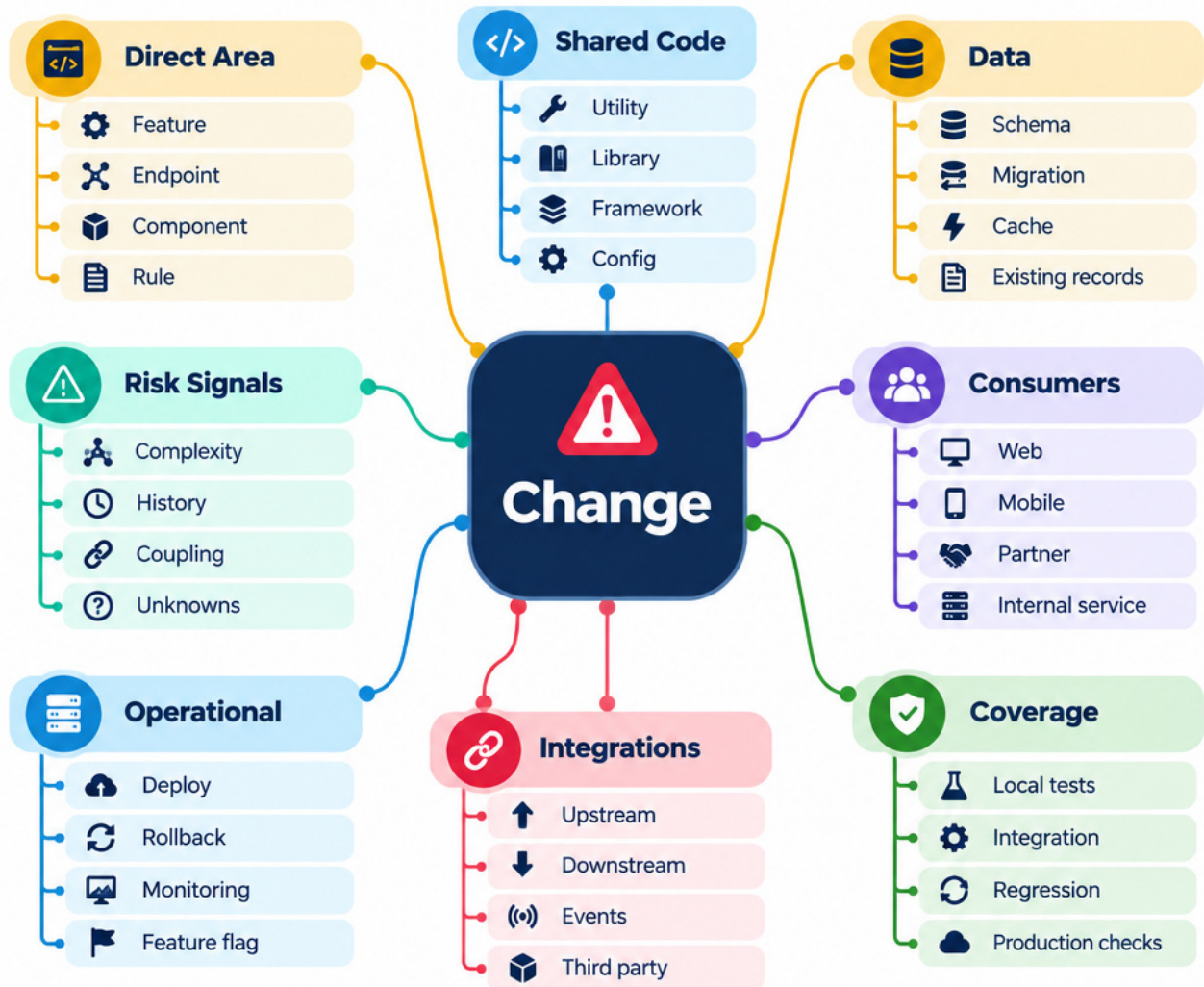


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Change Blast-Radius Assessment Map

Understand how far a seemingly small change can travel



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Quality Evidence Sufficiency Map

Decide whether there is enough evidence to trust the release



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08

Non Functional and Cross System Quality

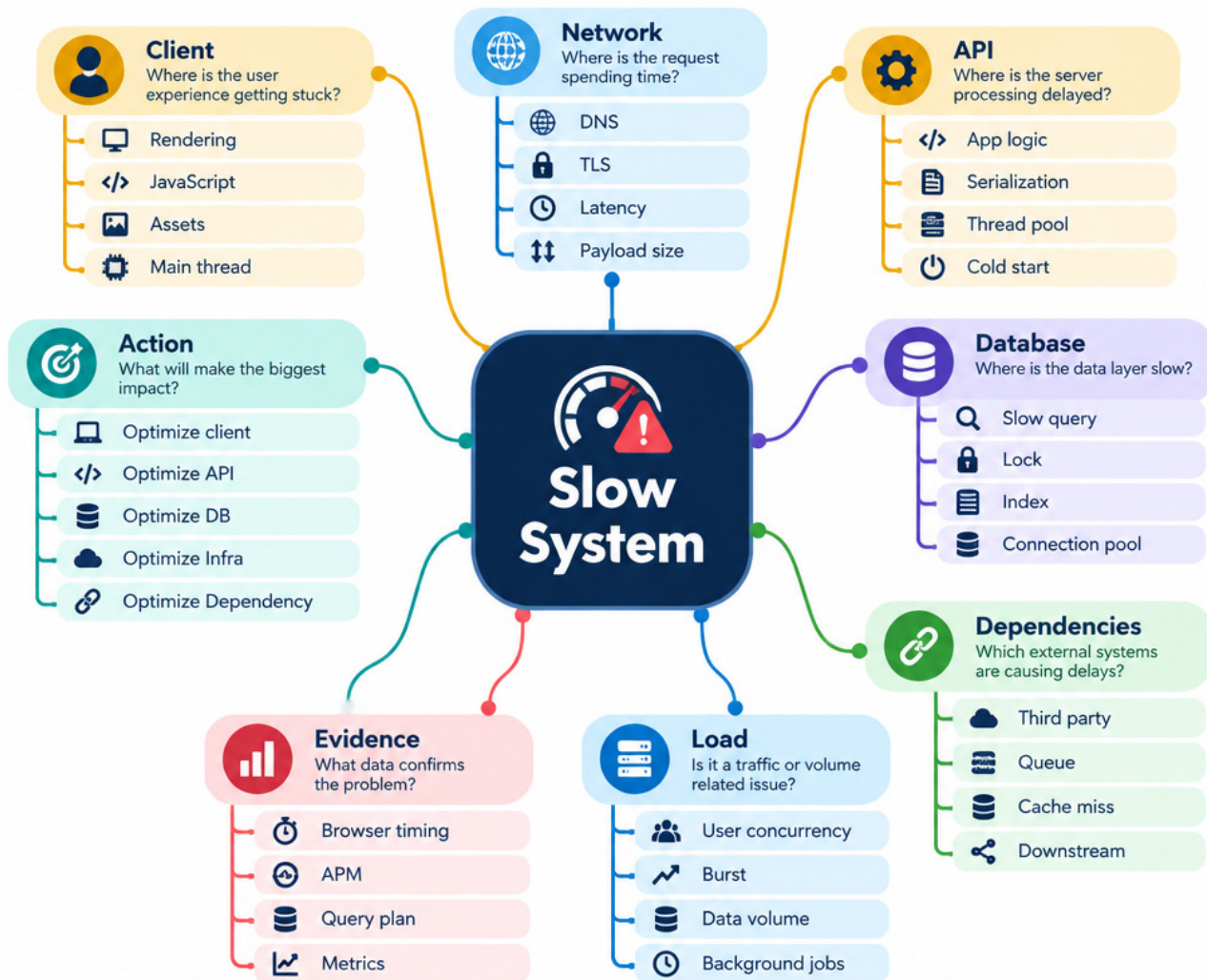
Explore performance, accessibility, security, privacy, resilience, localization, time, and cross-system quality risks.

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Performance Bottleneck Triage Map

Find where response time is being spent before tuning blindly

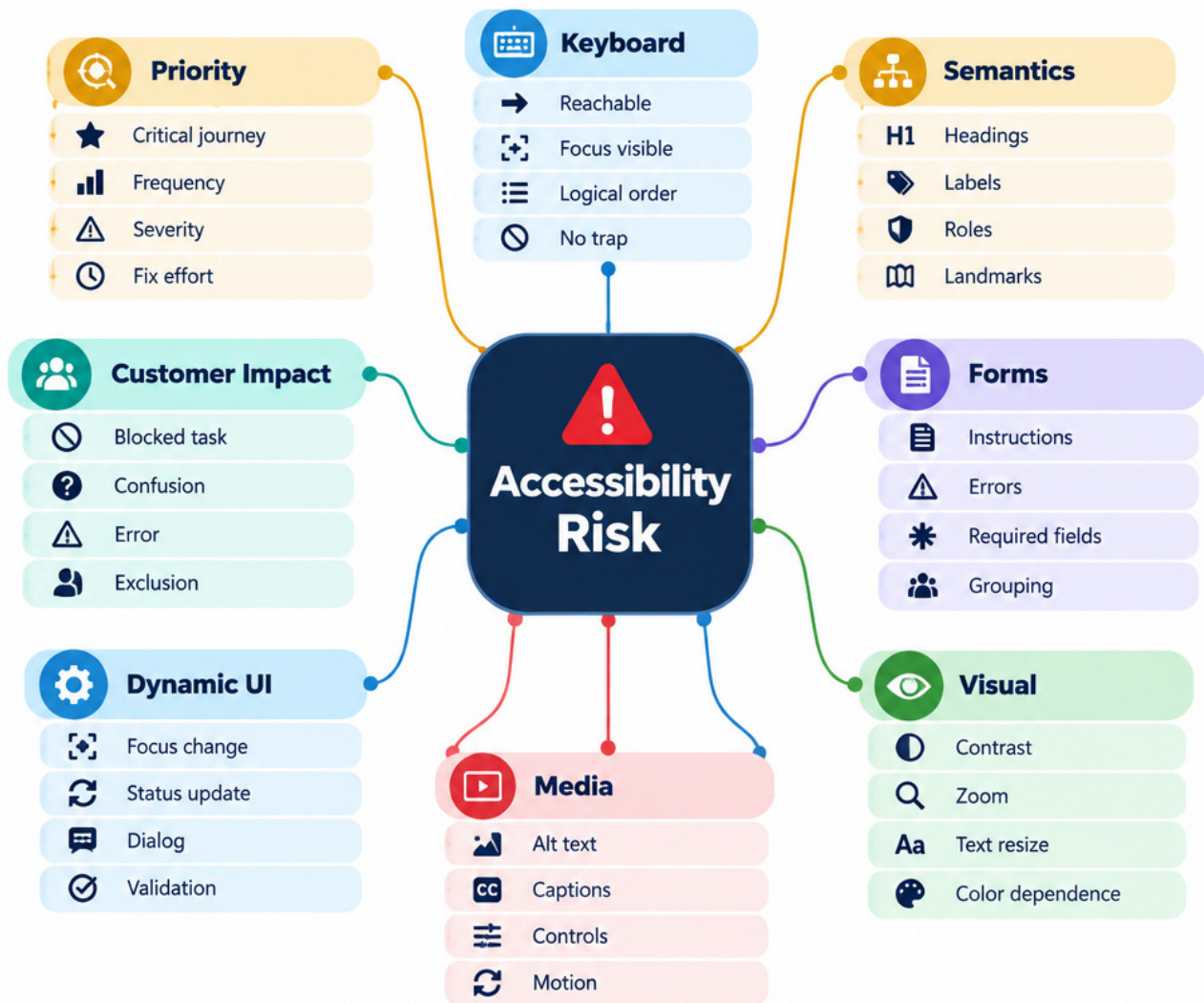


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Accessibility Risk Discovery Map

Find barriers before users discover them



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Security Testing Entry-Point Map

Know where to start looking for practical application security risks



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Localization & Internationalization Risk Map

Test whether the product works beyond one language and locale



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Cross-Browser Compatibility Investigation Map

Isolate whether a defect is browser-specific or product-wide



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Resilience & Recovery Test Design Map

Test whether the system fails safely and comes back cleanly



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Data Privacy Test Thinking Map

Test how personal and sensitive data is collected, used, and exposed

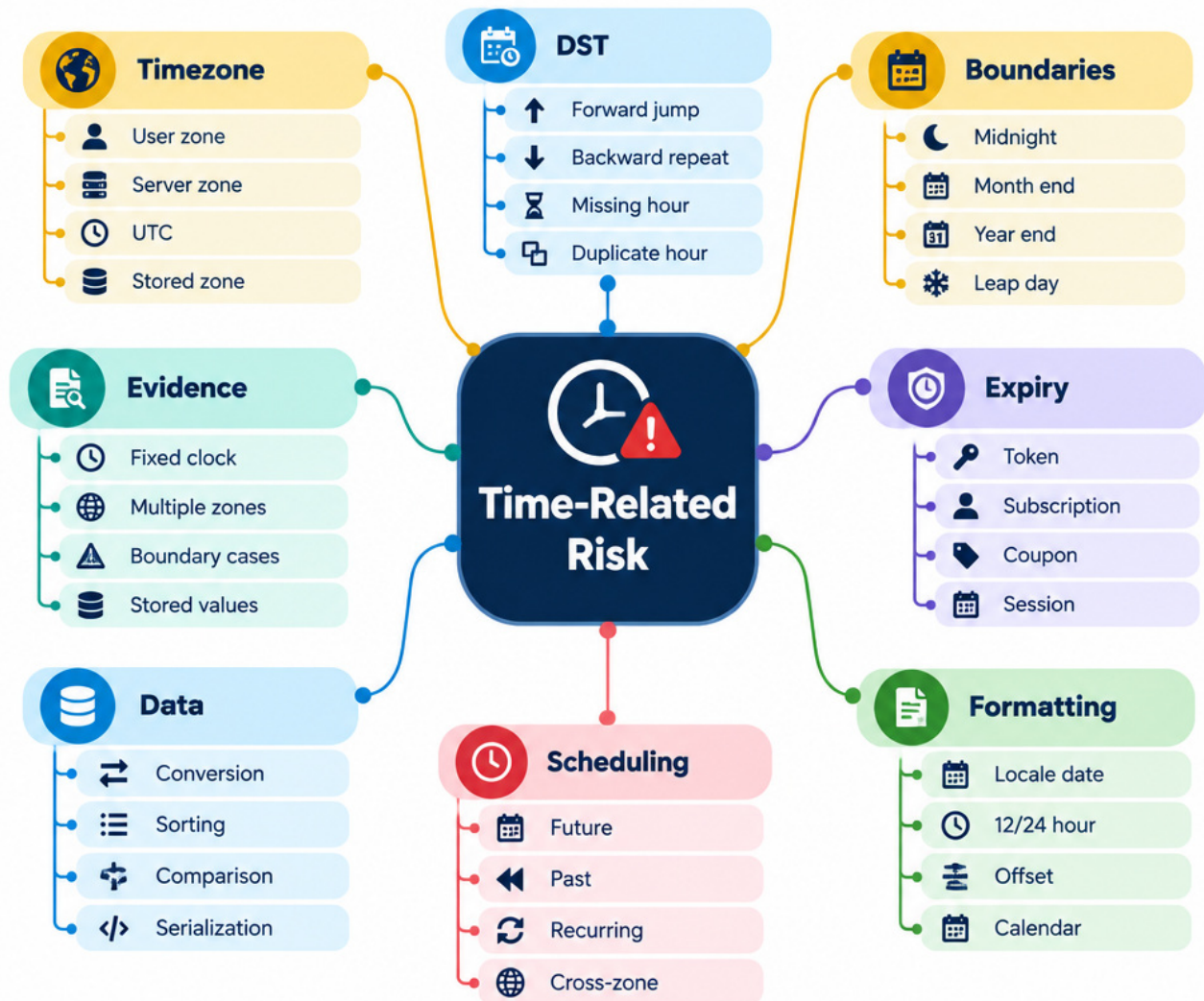


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Date, Time & Timezone Failure Map

Catch bugs that appear only when clocks, calendars, and locales disagree



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Third-Party Integration Risk Map

Plan for dependencies you do not control



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Observability & Monitoring Gap Map

Find what the team cannot currently see when quality fails



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Everyday QA Engineering and Team Decisions

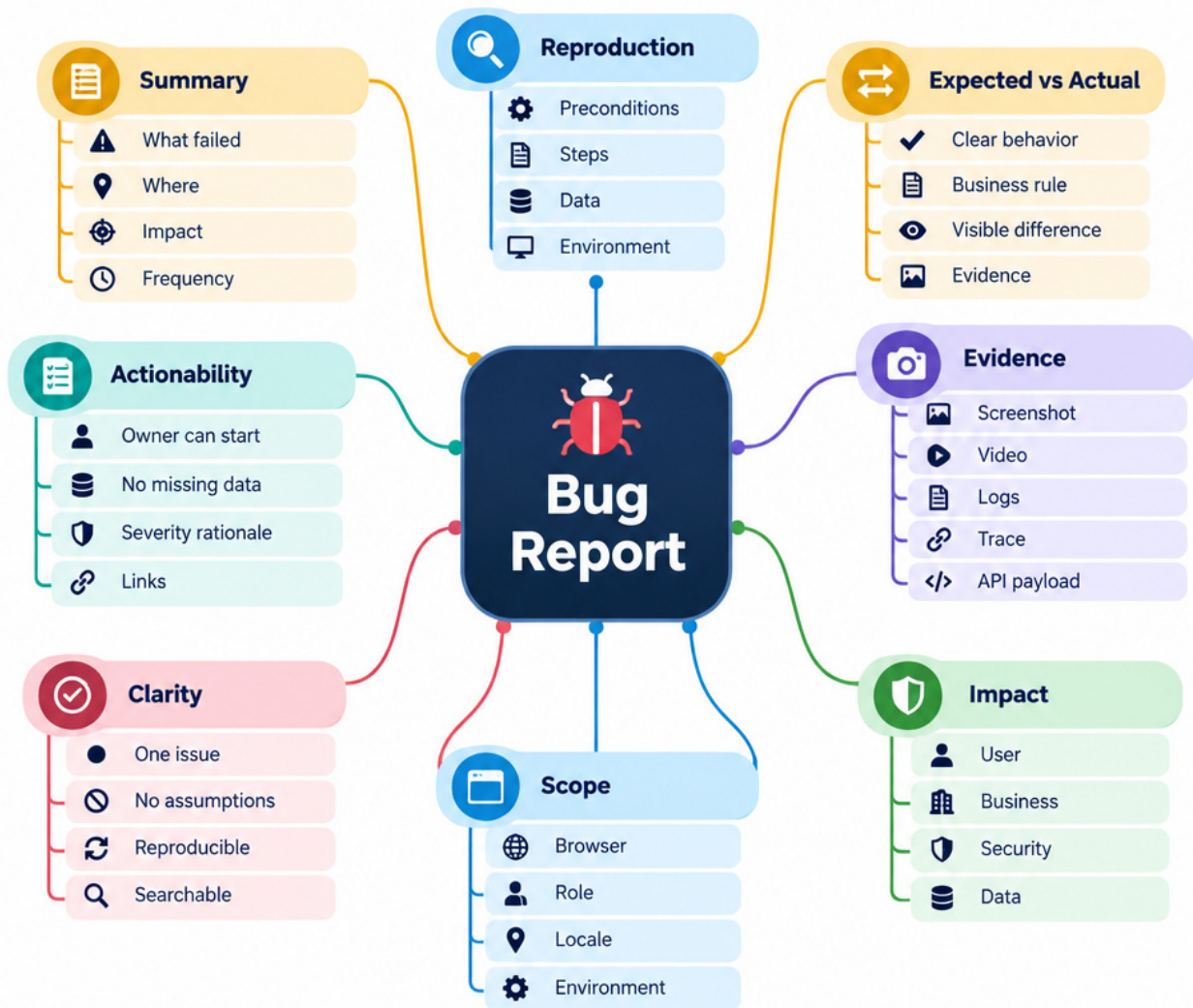
Strengthen everyday QA practice through better reviews, CI feedback, exploration, evidence, questions, and incident learning.

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Defect Report Quality Review Map

Make bug reports faster to understand and easier to act on

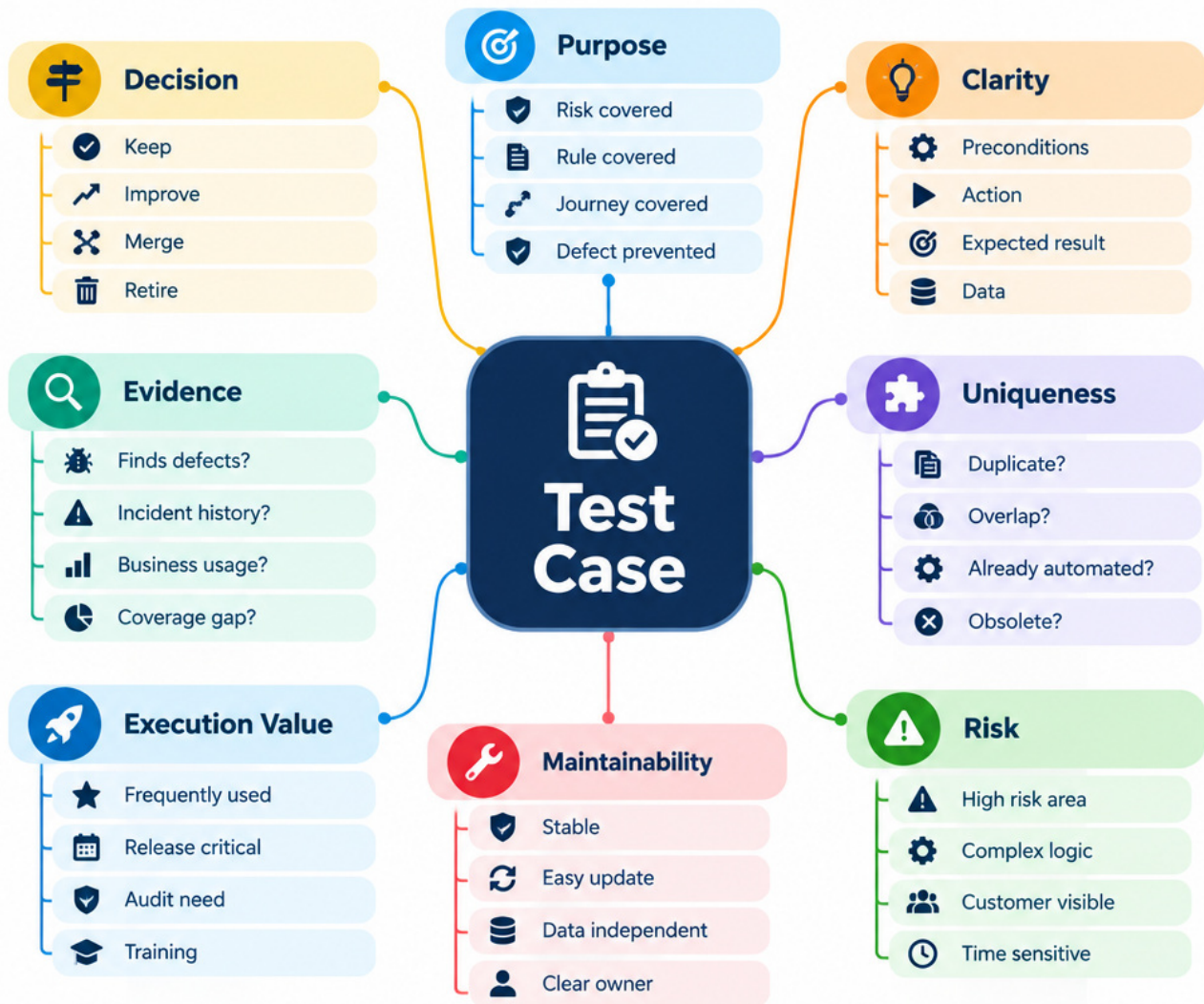


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Test Case Value Review Map

Keep test cases that add signal instead of paperwork

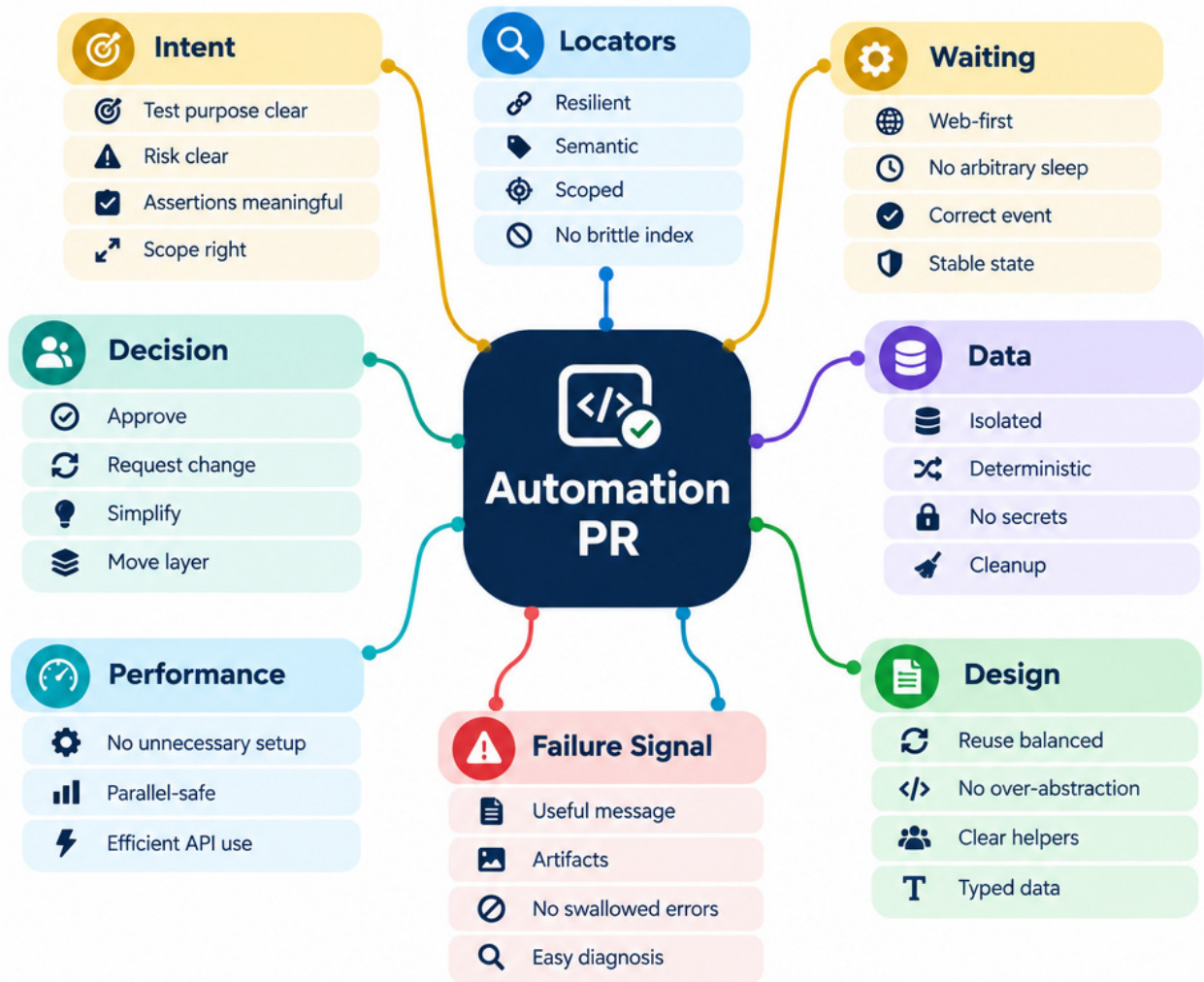


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Test Automation Code Review Map

Review automation for reliability, readability, and useful signal

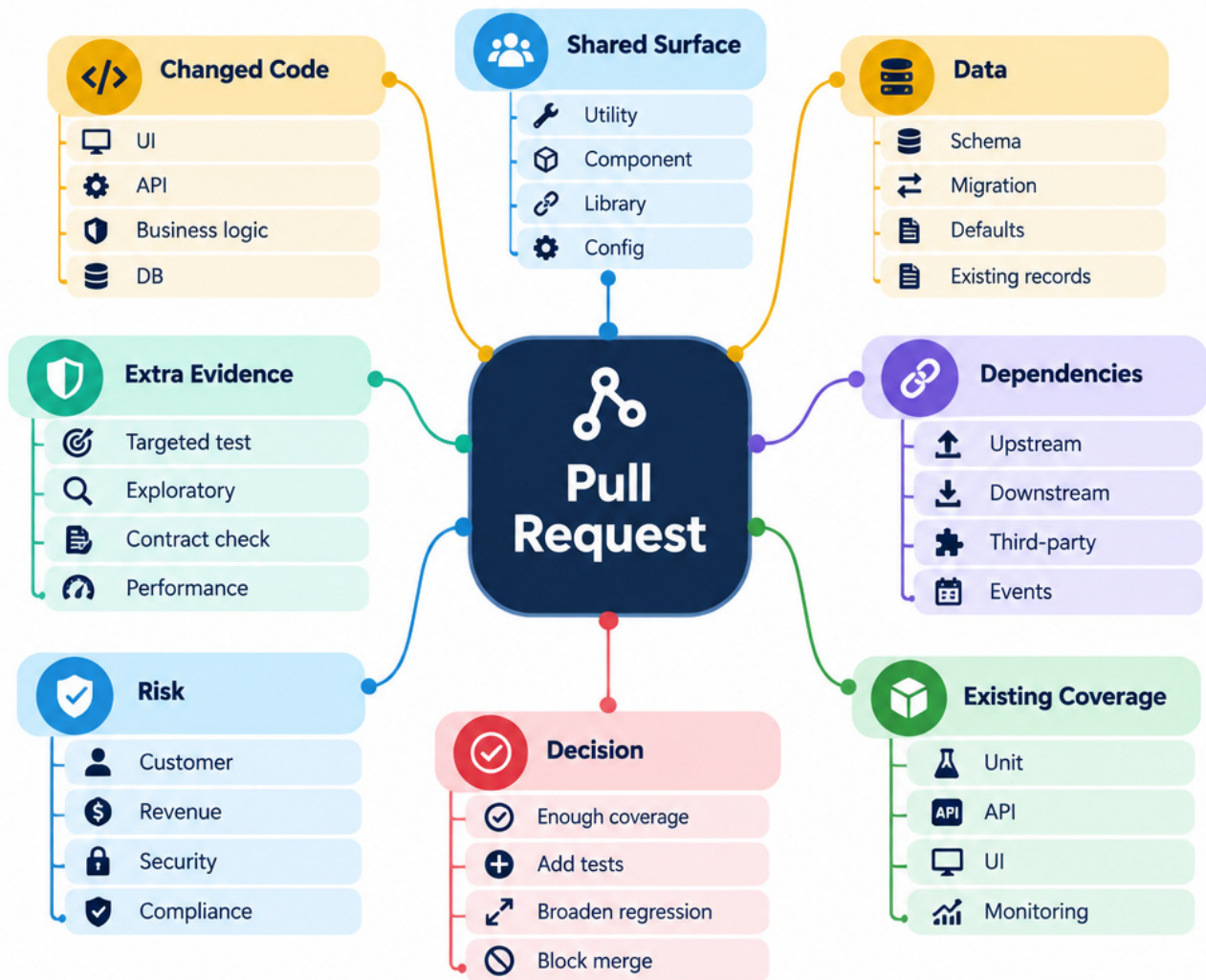


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Pull Request Test Impact Map

Connect code changes to the tests and risks that matter

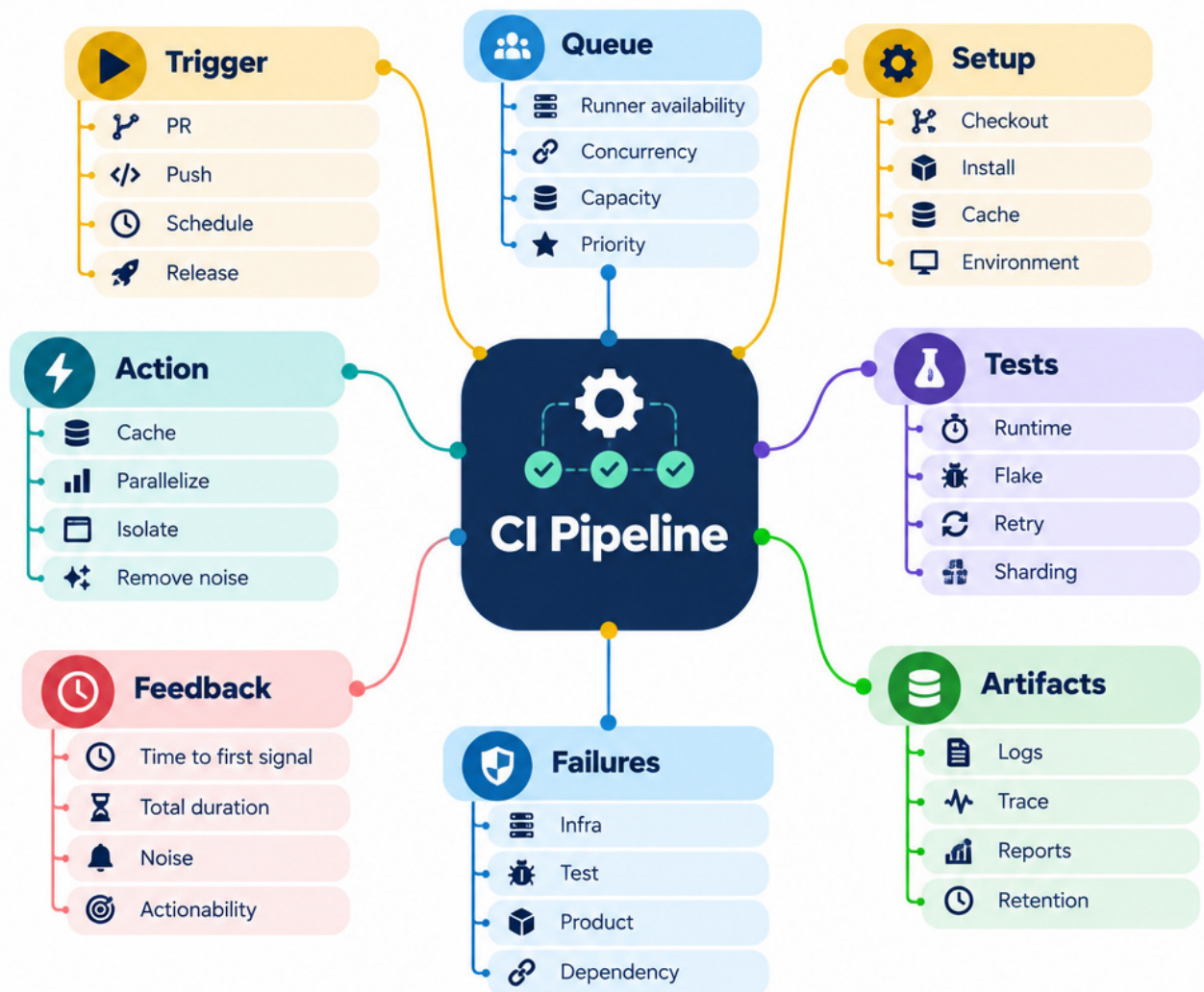


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CI Pipeline Quality Diagnosis Map

Find whether slow or unreliable feedback comes from tests or pipeline design



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Exploratory Testing Session Design Map

Turn exploration into focused learning instead of random clicking

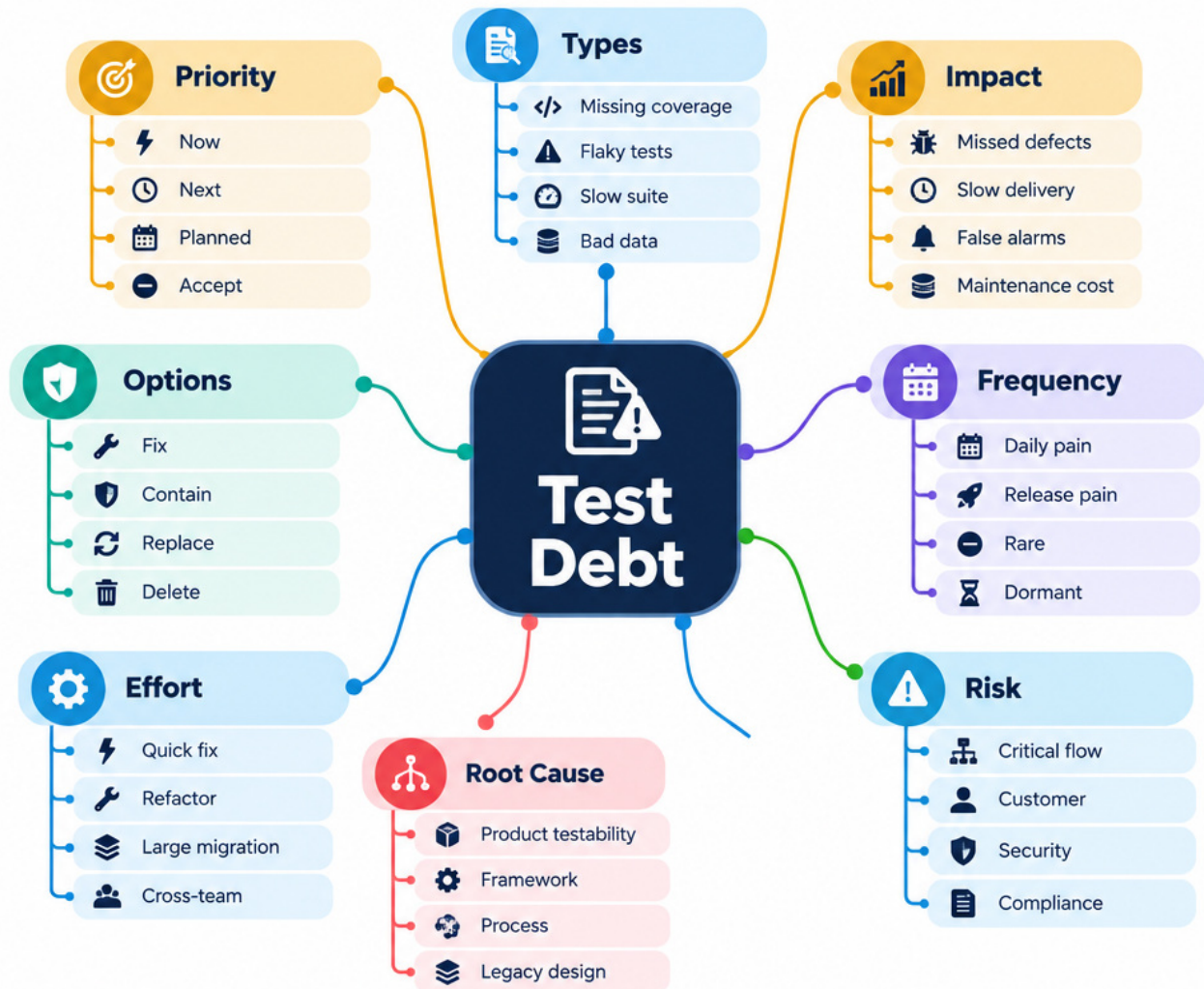


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Test Debt Triage Map

Decide which quality debt deserves attention first

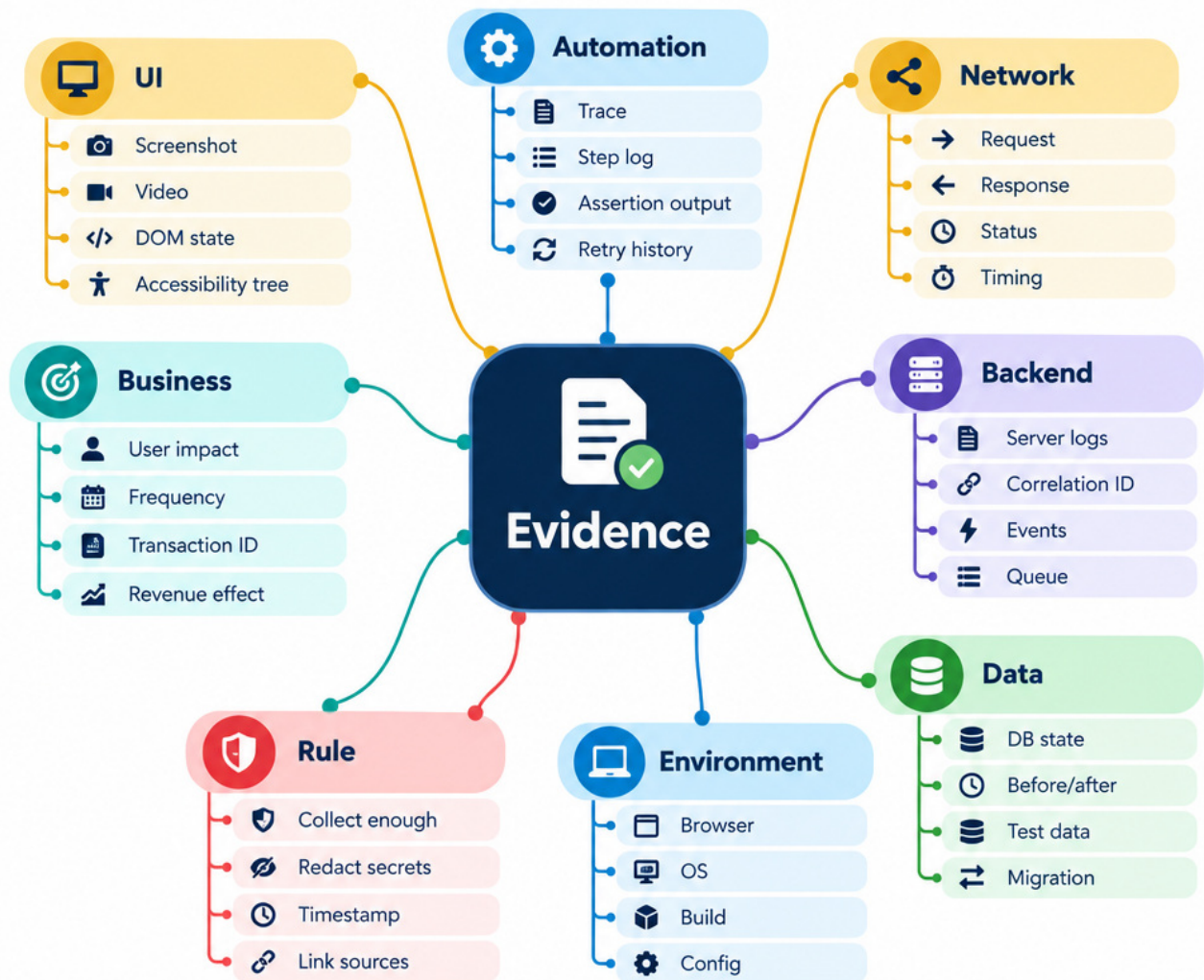


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What Evidence Should QA Collect? Map

Capture the right evidence before a failure becomes a guessing game



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What Questions Should QA Ask? Map

Use better questions to uncover risk before execution starts

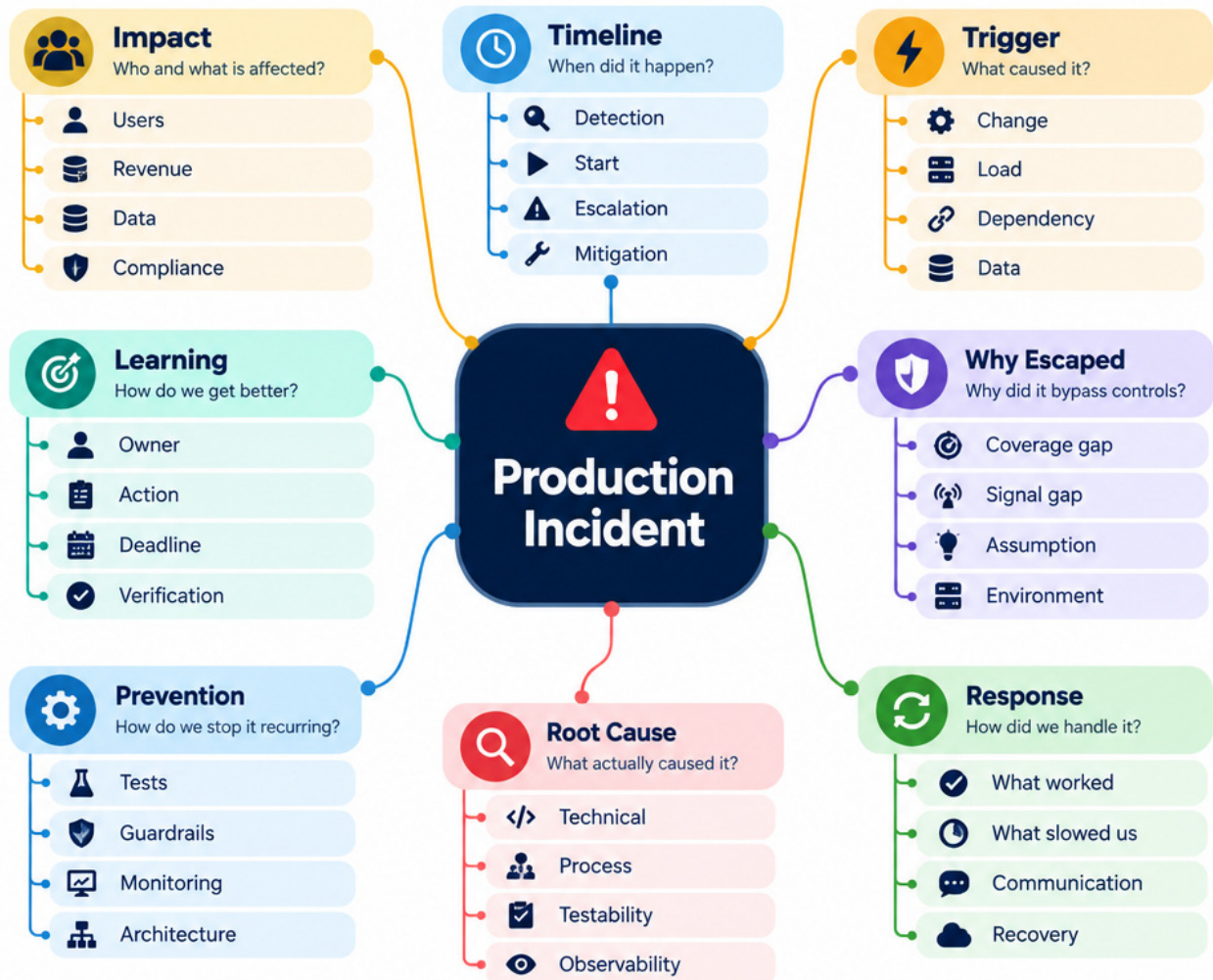


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Production Incident Learning Map

Turn incidents into better systems, tests, and decisions



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10

Advanced Quality Engineering and Production Systems

Address advanced production concerns including testability, silent failures, feature flags, migrations, caching, events, and unknown risk.

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Testability Improvement Decision Map

Improve the product so quality is easier to observe, control, and verify



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Silent Failure Detection Map

Find failures that do not crash, alert, or visibly break



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Manjunath NP | manjunathnp.in | github.com/manjunathnp | [linkedin.com/in/manjunathnp](https://www.linkedin.com/in/manjunathnp) | [Manjunath NP](https://www.linkedin.com/company/manjunathnp)

Feature Flag Testing Strategy Map

Test behavior safely when multiple versions exist at the same time



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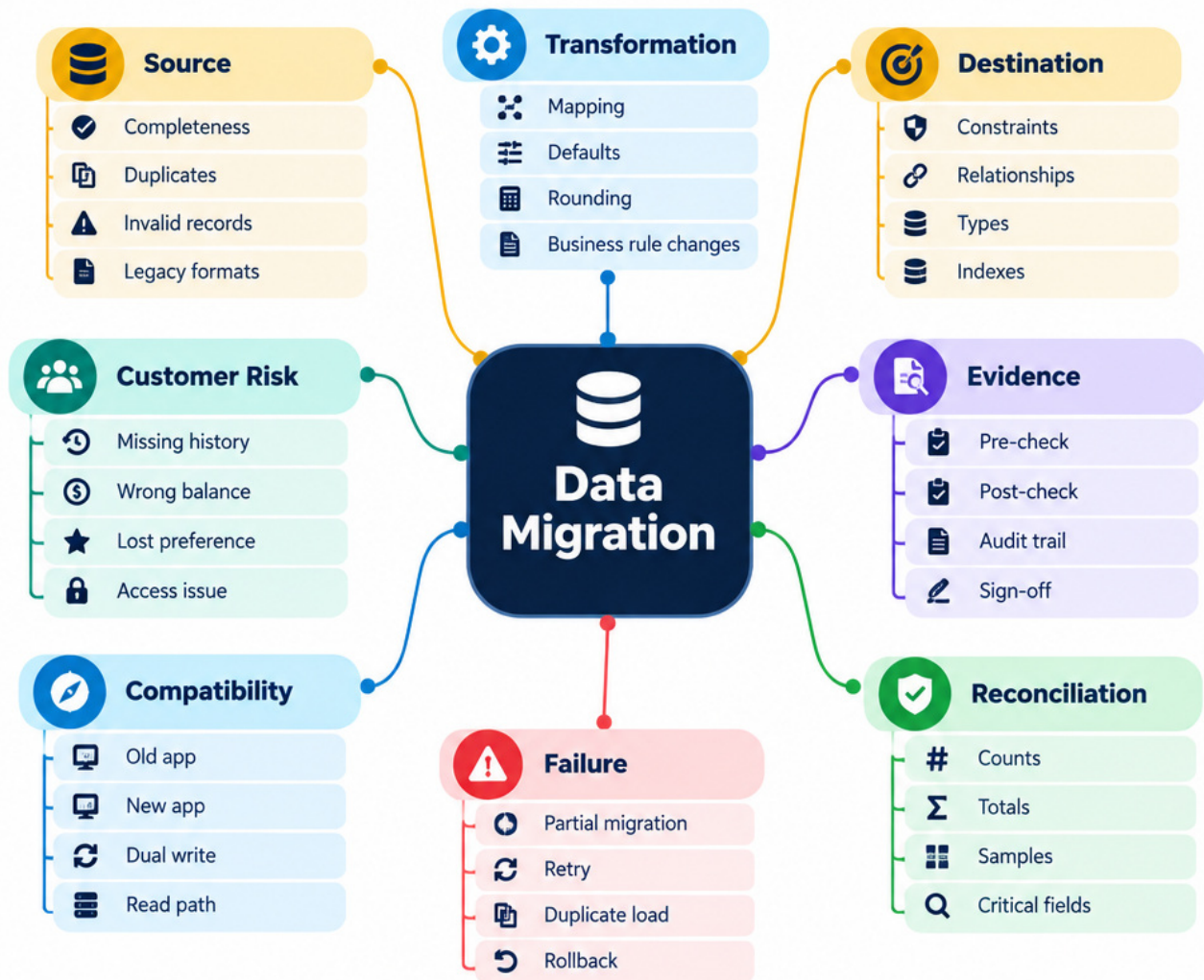
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Data Migration Quality Risk Map

Protect existing customer data while schemas and systems change

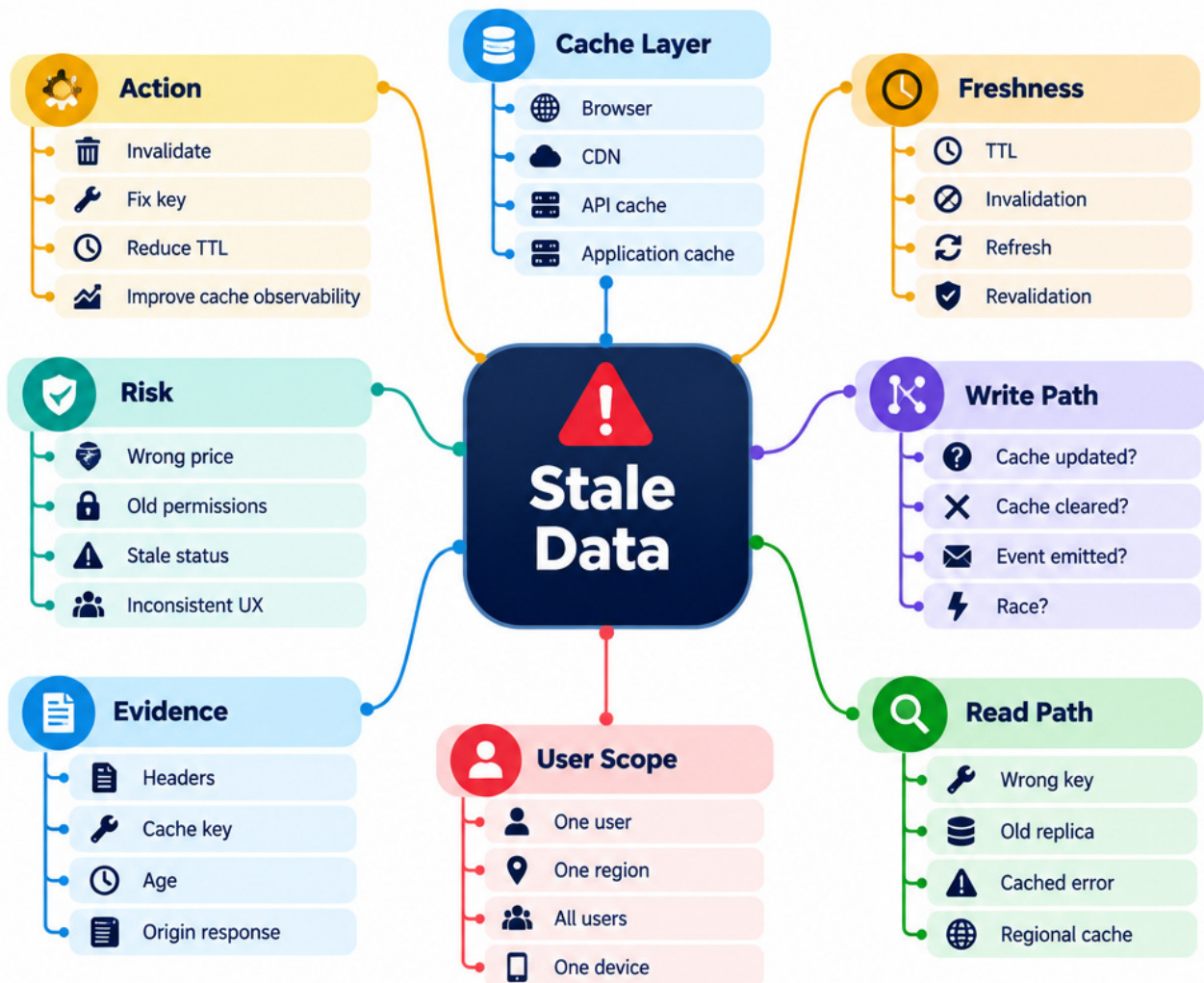


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Cache & Stale Data Investigation Map

Diagnose when users see the right system with the wrong freshness



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Event-Driven System Test Design Map

Test systems where behavior is distributed across events and consumers



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Observability-Driven Test Design Map

Design tests around signals that explain system behavior



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Progressive Delivery Validation Map

Validate quality while exposure increases gradually

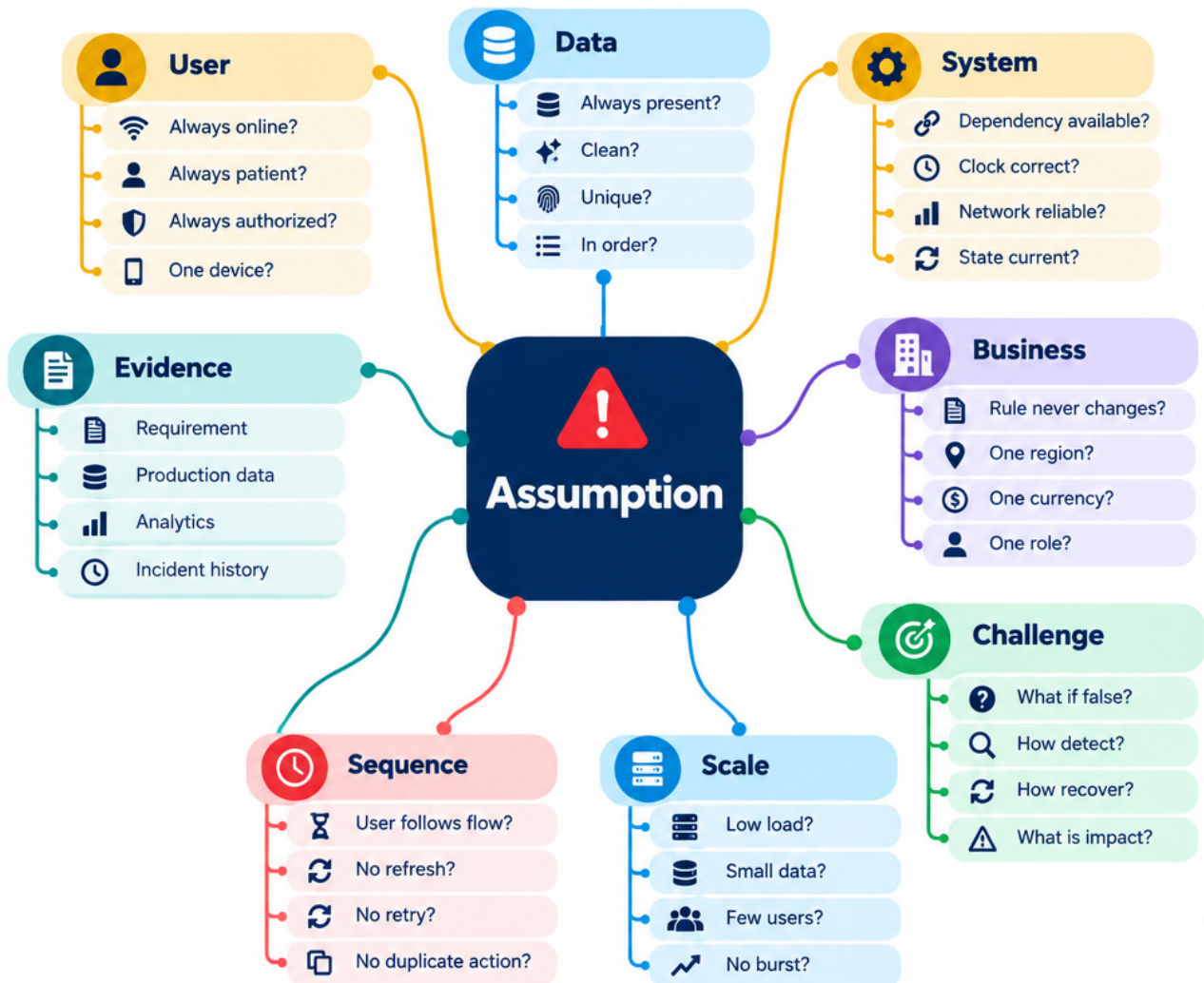


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Assumption Challenge Map for QA

Expose hidden assumptions before they become escaped defects



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Unknown Risk Discovery Map

Look beyond known test cases to find what nobody has asked yet



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