THE COMPLETE

Product Manager & Technical Product Manager Toolkit Handbook

From product thinking to APIs, engineering delivery, production, analytics and optimization

STANDARD REFERENCE + PRACTICAL APPLICATION GUIDE

Think → Discover → Validate → Define → Prioritize → Document → Design → Plan → Build → Integrate → Test → Release → Monitor → Measure → Learn → Iterate

Built as a study handbook, day-to-day reference and interview refresher.

How to Use This Handbook

This document treats “PM tools” broadly: frameworks, methods, working software, product artifacts and technical concepts. That is intentional. A real Product Manager chooses from all of them depending on the problem. A Technical Product Manager uses the same product foundation, then goes deeper into APIs, data, architecture, engineering workflow, releases, reliability and security.

Every tool has five pieces

Breakdown	What you should learn
What it is / what it does	The exact problem or job the tool solves.
When to use it	The situations where the tool becomes useful.
Application guide	A repeatable workflow for applying it in product work.
Practical example	A simple scenario showing the tool in context.
Role relevance	How important the tool is for PM, TPM or both.

How deep should you learn each tool?

- PM Core: learn it well enough to lead the work or make the product decision confidently.
- TPM Core: learn it deeply enough to discuss contracts, risks, testing and delivery with engineering.
- TPM Awareness: understand what it does and how it affects delivery; you normally do not need specialist-level operation.
- Both: useful regardless of title; the depth changes according to your team and product.

The most important rule **Do not learn tools as isolated software. Learn the product workflow they support. A perfect Jira board, beautiful roadmap or flawless Postman collection is not product success unless it helps the team solve the right problem and produce a measurable outcome.**

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PART 1

Product Thinking & Problem Solving

Use these before jumping to solutions. They help you define the problem, understand causes and frame opportunities.

IN THIS PART	5 Whys, Problem Statement, How Might We, Jobs To Be Done (JTBD), Design Thinking, First Principles Thinking, Opportunity Solution Tree, Assumption Mapping, Hypothesis Framework, Root Cause Analysis (RCA), Fishbone Diagram, User Journey Mapping, Service Blueprint, Mind Mapping, User Story Mapping

1. 5 Whys

Framework | Both

WHAT IT IS / WHAT IT DOES	Find the underlying cause of a recurring problem by asking why repeatedly.
WHEN TO USE IT	When a metric drops, a defect repeats or a process keeps failing.
PRACTICAL EXAMPLE	Checkout drops because provider timeouts increased; the root action becomes retry/failover rather than a cosmetic redesign.

Application guide

1. Define the product question or decision this framework should support.
2. Collect the minimum evidence or inputs needed; do not score from instinct alone.
3. Apply the framework consistently across the items or problem.
4. Challenge the result with user value, strategy, risk and dependencies.
5. Document the decision, assumptions and what would cause you to revisit it.

PM/TPM usage note: Both PM and TPM roles benefit from this; the required technical depth depends on the product and team.

2. Problem Statement

Product artifact | Both

WHAT IT IS / WHAT IT DOES	Describe who has a problem, what happens, why it matters and the evidence behind it.
WHEN TO USE IT	At the start of discovery and before writing solution requirements.
PRACTICAL EXAMPLE	Verified users fail during peak wallet funding, reducing first successful transactions.

Application guide

1. Define the product question or decision this framework should support.
2. Collect the minimum evidence or inputs needed; do not score from instinct alone.
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4. Challenge the result with user value, strategy, risk and dependencies.
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3. How Might We

Ideation framework | Both

WHAT IT IS / WHAT IT DOES	Turn a validated problem into an open question that allows multiple solutions.
WHEN TO USE IT	After problem definition and before brainstorming.
PRACTICAL EXAMPLE	How might we reduce KYC effort without weakening compliance?

Application guide

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2. Collect the minimum evidence or inputs needed; do not score from instinct alone.
3. Apply the framework consistently across the items or problem.
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4. Jobs To Be Done (JTBD)

Discovery framework | Both

WHAT IT IS / WHAT IT DOES	Understand the progress a user is trying to make rather than only requested features.
WHEN TO USE IT	For interviews, value propositions and outcome definition.
PRACTICAL EXAMPLE	The job is not “use transfer”; it is “send money and feel certain it arrived.”

Application guide

1. Write the learning question before opening Jobs To Be Done (JTBD).
2. Select representative users, sessions, tickets or responses.
3. Collect evidence without leading the participant toward your preferred answer.
4. Tag, segment or summarize recurring patterns and contradictions.
5. Turn findings into a problem statement, hypothesis or product decision and link back to the evidence.

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5. Design Thinking

Problem-solving process | Both

WHAT IT IS / WHAT IT DOES	Structure work through empathize, define, ideate, prototype and test.
WHEN TO USE IT	For ambiguous customer problems where learning should happen before build.
PRACTICAL EXAMPLE	Interview onboarding users, define friction, prototype a simpler flow and test it.

Application guide

1. Write the learning question before opening Design Thinking.
2. Select representative users, sessions, tickets or responses.
3. Collect evidence without leading the participant toward your preferred answer.

4. Tag, segment or summarize recurring patterns and contradictions.
5. Turn findings into a problem statement, hypothesis or product decision and link back to the evidence.

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6. First Principles Thinking

Reasoning method | Both

WHAT IT IS / WHAT IT DOES	Break assumptions into facts and rebuild the solution from fundamentals.
WHEN TO USE IT	For difficult strategic or technical decisions dominated by convention.
PRACTICAL EXAMPLE	Ask which marketplace actions truly require login rather than assuming everything must.

Application guide

1. Define the product question or decision this framework should support.
2. Collect the minimum evidence or inputs needed; do not score from instinct alone.
3. Apply the framework consistently across the items or problem.
4. Challenge the result with user value, strategy, risk and dependencies.
5. Document the decision, assumptions and what would cause you to revisit it.

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7. Opportunity Solution Tree

Discovery framework | Both

WHAT IT IS / WHAT IT DOES	Connect a desired outcome to user opportunities, solutions and experiments.
WHEN TO USE IT	When many ideas compete and the team needs continuous discovery structure.
PRACTICAL EXAMPLE	Activation outcome branches into KYC confusion, unclear value and funding friction.

Application guide

1. Define the product question or decision this framework should support.
2. Collect the minimum evidence or inputs needed; do not score from instinct alone.
3. Apply the framework consistently across the items or problem.
4. Challenge the result with user value, strategy, risk and dependencies.
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8. Assumption Mapping

Risk framework | Both

WHAT IT IS / WHAT IT DOES	Identify what must be true for an idea to work and which assumptions are riskiest.
WHEN TO USE IT	Before expensive builds, new markets or major integrations.

PRACTICAL EXAMPLE	Validate desire, compliance feasibility and technical feasibility before crypto checkout.

Application guide

1. Define the product question or decision this framework should support.
2. Collect the minimum evidence or inputs needed; do not score from instinct alone.
3. Apply the framework consistently across the items or problem.
4. Challenge the result with user value, strategy, risk and dependencies.
5. Document the decision, assumptions and what would cause you to revisit it.

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9. Hypothesis Framework

Experiment framework | Both

WHAT IT IS / WHAT IT DOES	State what change should cause what measurable behavior for which users.
WHEN TO USE IT	Before experiments, prototypes or controlled releases.
PRACTICAL EXAMPLE	Showing KYC progress should raise completion by at least 10%.

Application guide

1. Define the product question or decision this framework should support.
2. Collect the minimum evidence or inputs needed; do not score from instinct alone.
3. Apply the framework consistently across the items or problem.
4. Challenge the result with user value, strategy, risk and dependencies.
5. Document the decision, assumptions and what would cause you to revisit it.

PM/TPM usage note: Both PM and TPM roles benefit from this; the required technical depth depends on the product and team.

10. Root Cause Analysis (RCA)

Investigation method | Both

WHAT IT IS / WHAT IT DOES	Determine why an incident or failure occurred and how to prevent recurrence.
WHEN TO USE IT	After serious incidents, defects or repeated process failures.
PRACTICAL EXAMPLE	Provider timeout was worsened by missing retries and weak alerting.

Application guide

1. Confirm the incident, scope and customer/business impact quickly.
2. Assign incident leadership and the technical owners needed to stabilize service.
3. Mitigate first through rollback, feature flag, failover or other safe action.
4. Communicate factual updates while preserving a timeline and evidence.
5. Run RCA/postmortem and track preventive actions to completion.

PM/TPM usage note: Both PM and TPM roles benefit from this; the required technical depth depends on the product and team.

11. Fishbone Diagram

Root-cause visualization | Both

WHAT IT IS / WHAT IT DOES	Organize possible causes into categories such as People, Process, Technology and Data.
WHEN TO USE IT	When a problem has many plausible causes.
PRACTICAL EXAMPLE	Release delays are mapped to requirement, QA, dependency and environment causes.

Application guide

1. State the workshop or diagram objective at the top of the board.
2. Create only the sections needed for the conversation or flow.
3. Add input collaboratively, then group duplicates and related ideas.
4. Mark decisions, unknowns, dependencies and owners visually.
5. Move final decisions into the durable PRD, roadmap or delivery system.

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12. User Journey Mapping

Experience map | Both

WHAT IT IS / WHAT IT DOES	Visualize user actions, touchpoints, thoughts, emotions and pain points across a journey.
WHEN TO USE IT	For onboarding, checkout, support, retention and multi-step experiences.
PRACTICAL EXAMPLE	Browse → cart → pay → track → receive → support reveals where trust breaks.

Application guide

1. State the workshop or diagram objective at the top of the board.
2. Create only the sections needed for the conversation or flow.
3. Add input collaboratively, then group duplicates and related ideas.
4. Mark decisions, unknowns, dependencies and owners visually.
5. Move final decisions into the durable PRD, roadmap or delivery system.

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13. Service Blueprint

Operational experience map | Both

WHAT IT IS / WHAT IT DOES	Connect the customer journey to frontstage, backstage teams, processes and systems.
WHEN TO USE IT	When experience depends on operations, logistics, support or multiple services.
PRACTICAL EXAMPLE	Order tracking maps to courier data, notifications, merchant fulfillment and support.

Application guide

1. State the workshop or diagram objective at the top of the board.
2. Create only the sections needed for the conversation or flow.
3. Add input collaboratively, then group duplicates and related ideas.
4. Mark decisions, unknowns, dependencies and owners visually.
5. Move final decisions into the durable PRD, roadmap or delivery system.

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14. Mind Mapping

Thinking visualization | Both

WHAT IT IS / WHAT IT DOES	Organize a broad topic into connected branches, questions and opportunities.
WHEN TO USE IT	Early discovery or workshops where the problem space is messy.
PRACTICAL EXAMPLE	Marketplace Trust branches into escrow, ratings, verification, disputes and fraud.

Application guide

1. State the workshop or diagram objective at the top of the board.
2. Create only the sections needed for the conversation or flow.
3. Add input collaboratively, then group duplicates and related ideas.
4. Mark decisions, unknowns, dependencies and owners visually.
5. Move final decisions into the durable PRD, roadmap or delivery system.

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15. User Story Mapping

Planning framework | Both

WHAT IT IS / WHAT IT DOES	Arrange activities, tasks and stories in journey order and slice releases horizontally.
WHEN TO USE IT	For MVP scoping and end-to-end release planning.
PRACTICAL EXAMPLE	Browse → Select → Cart → Checkout → Pay → Track, with an MVP slice through each.

Application guide

1. Define the product question or decision this framework should support.
2. Collect the minimum evidence or inputs needed; do not score from instinct alone.
3. Apply the framework consistently across the items or problem.
4. Challenge the result with user value, strategy, risk and dependencies.
5. Document the decision, assumptions and what would cause you to revisit it.

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PART 2

Product Discovery & User Research

Discovery tools gather evidence from users, behavior, support and the market.

IN THIS PART	Google Forms, Typeform, SurveyMonkey, UserTesting, Maze, Dovetail, Hotjar, Microsoft Clarity, Intercom, Zendesk, Customer Interviews, Surveys, Observation / Contextual Inquiry, Competitor Analysis, Usability Testing, Review Mining

16. Google Forms

Survey software | PM Core

WHAT IT IS / WHAT IT DOES	Create simple questionnaires and structured feedback forms.
WHEN TO USE IT	For quick low-cost surveys without complex logic.
PRACTICAL EXAMPLE	Survey new users on the hardest onboarding step and why they almost abandoned.

Application guide

1. Write the learning question before opening Google Forms.
2. Select representative users, sessions, tickets or responses.
3. Collect evidence without leading the participant toward your preferred answer.
4. Tag, segment or summarize recurring patterns and contradictions.
5. Turn findings into a problem statement, hypothesis or product decision and link back to the evidence.

PM/TPM usage note: You should be able to lead or independently use this in normal product work.

17. Typeform

Survey/form software | PM Core

WHAT IT IS / WHAT IT DOES	Create polished conversational forms with conditional logic.
WHEN TO USE IT	When survey experience and branching matter.
PRACTICAL EXAMPLE	Show seller questions only to respondents who identify as vendors.

Application guide

1. Write the learning question before opening Typeform.
2. Select representative users, sessions, tickets or responses.
3. Collect evidence without leading the participant toward your preferred answer.
4. Tag, segment or summarize recurring patterns and contradictions.
5. Turn findings into a problem statement, hypothesis or product decision and link back to the evidence.

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18. SurveyMonkey

Survey software | PM Core

WHAT IT IS / WHAT IT DOES	Run structured surveys with templates, logic and reporting.
WHEN TO USE IT	For larger or repeated customer measurement programs.
PRACTICAL EXAMPLE	Measure delivery, refund and support satisfaction quarterly.

Application guide

1. Write the learning question before opening SurveyMonkey.
2. Select representative users, sessions, tickets or responses.
3. Collect evidence without leading the participant toward your preferred answer.
4. Tag, segment or summarize recurring patterns and contradictions.
5. Turn findings into a problem statement, hypothesis or product decision and link back to the evidence.

PM/TPM usage note: You should be able to lead or independently use this in normal product work.

19. UserTesting

Usability research platform | PM Core

WHAT IT IS / WHAT IT DOES	Observe real users completing tasks while explaining their thinking.
WHEN TO USE IT	When you need to see where users struggle rather than only ask them.
PRACTICAL EXAMPLE	Ask a first-time user to send money to a saved beneficiary and observe confusion.

Application guide

1. Write the learning question before opening UserTesting.
2. Select representative users, sessions, tickets or responses.
3. Collect evidence without leading the participant toward your preferred answer.
4. Tag, segment or summarize recurring patterns and contradictions.
5. Turn findings into a problem statement, hypothesis or product decision and link back to the evidence.

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20. Maze

Prototype testing platform | PM Core

WHAT IT IS / WHAT IT DOES	Test prototypes, paths, task completion and misclicks at scale.
WHEN TO USE IT	Before development or when comparing design options.
PRACTICAL EXAMPLE	Compare two signup flows and measure which reaches verification more cleanly.

Application guide

1. Write the learning question before opening Maze.
2. Select representative users, sessions, tickets or responses.
3. Collect evidence without leading the participant toward your preferred answer.
4. Tag, segment or summarize recurring patterns and contradictions.
5. Turn findings into a problem statement, hypothesis or product decision and link back to the evidence.

PM/TPM usage note: You should be able to lead or independently use this in normal product work.

21. Dovetail

Research repository | PM Core

WHAT IT IS / WHAT IT DOES	Store, tag and synthesize interviews, notes and customer evidence.
WHEN TO USE IT	For continuous research where findings must remain searchable.
PRACTICAL EXAMPLE	Tag themes such as trust, fees, delivery delay and payment failure.

Application guide

1. Write the learning question before opening Dovetail.
2. Select representative users, sessions, tickets or responses.
3. Collect evidence without leading the participant toward your preferred answer.

4. Tag, segment or summarize recurring patterns and contradictions.
5. Turn findings into a problem statement, hypothesis or product decision and link back to the evidence.

PM/TPM usage note: You should be able to lead or independently use this in normal product work.

22. Hotjar

Behavior analytics | PM Core

WHAT IT IS / WHAT IT DOES	Use heatmaps, session recordings, surveys and feedback to understand web behavior.
WHEN TO USE IT	When quantitative funnels need qualitative context.
PRACTICAL EXAMPLE	Recordings show users repeatedly clicking a disabled Continue button.

Application guide

1. Start with the product question, metric definition and expected user behavior.
2. Verify the event/data instrumentation before interpreting charts.
3. Build the relevant funnel, cohort, segment or dashboard.
4. Compare meaningful segments and time periods; check for data-quality traps.
5. Turn the finding into an action, experiment or follow-up research question.

PM/TPM usage note: You should be able to lead or independently use this in normal product work.

23. Microsoft Clarity

Behavior analytics | PM Core

WHAT IT IS / WHAT IT DOES	Analyze website session replays, heatmaps, dead clicks and rage clicks.
WHEN TO USE IT	For lightweight web behavior diagnosis.
PRACTICAL EXAMPLE	Mobile users miss a fee disclosure below the fold.

Application guide

1. Start with the product question, metric definition and expected user behavior.
2. Verify the event/data instrumentation before interpreting charts.
3. Build the relevant funnel, cohort, segment or dashboard.
4. Compare meaningful segments and time periods; check for data-quality traps.
5. Turn the finding into an action, experiment or follow-up research question.

PM/TPM usage note: You should be able to lead or independently use this in normal product work.

24. Intercom

Customer communication platform | Both

WHAT IT IS / WHAT IT DOES	Collect support conversations, feedback and in-product communication.
WHEN TO USE IT	When customer conversations should feed product discovery.
PRACTICAL EXAMPLE	A recurring “Where is my refund?” theme reveals missing status transparency.

Application guide

1. Define useful ticket/conversation categories tied to product areas.
2. Measure volume and read representative conversations, not only counts.
3. Separate education issues, bugs, policy problems and unmet product needs.
4. Link recurring evidence to discovery, bug or roadmap work.
5. Measure whether the product change actually reduces the underlying support demand.

PM/TPM usage note: Both PM and TPM roles benefit from this; the required technical depth depends on the product and team.

25. Zendesk

Customer support platform | Both

WHAT IT IS / WHAT IT DOES	Manage tickets and analyze repeated customer issues.
WHEN TO USE IT	When support volume is a major evidence source.
PRACTICAL EXAMPLE	Password-reset tickets spike after an auth change, triggering product investigation.

Application guide

1. Define useful ticket/conversation categories tied to product areas.
2. Measure volume and read representative conversations, not only counts.
3. Separate education issues, bugs, policy problems and unmet product needs.
4. Link recurring evidence to discovery, bug or roadmap work.
5. Measure whether the product change actually reduces the underlying support demand.

PM/TPM usage note: Both PM and TPM roles benefit from this; the required technical depth depends on the product and team.

26. Customer Interviews

Research method | PM Core

WHAT IT IS / WHAT IT DOES	Learn user motivations, context, past behavior, pain points and workarounds.
WHEN TO USE IT	Whenever you need depth and causality.
PRACTICAL EXAMPLE	Ask what happened the last time a transfer failed and what the user did next.

Application guide

1. Write the learning question before opening Customer Interviews.
2. Select representative users, sessions, tickets or responses.
3. Collect evidence without leading the participant toward your preferred answer.
4. Tag, segment or summarize recurring patterns and contradictions.
5. Turn findings into a problem statement, hypothesis or product decision and link back to the evidence.

PM/TPM usage note: You should be able to lead or independently use this in normal product work.

27. Surveys

Research method | PM Core

WHAT IT IS / WHAT IT DOES	Collect structured input from a broader user sample.
WHEN TO USE IT	When interview themes need quantification.

PRACTICAL EXAMPLE	Measure which of five onboarding steps is reported as hardest.

Application guide

1. Write the learning question before opening Surveys.
2. Select representative users, sessions, tickets or responses.
3. Collect evidence without leading the participant toward your preferred answer.
4. Tag, segment or summarize recurring patterns and contradictions.
5. Turn findings into a problem statement, hypothesis or product decision and link back to the evidence.

PM/TPM usage note: You should be able to lead or independently use this in normal product work.

28. Observation / Contextual Inquiry

Research method | PM Core

WHAT IT IS / WHAT IT DOES	Watch users perform real work in their normal context.
WHEN TO USE IT	When actual workflows and workarounds matter more than stated preferences.
PRACTICAL EXAMPLE	Observe a merchant reconcile payments across spreadsheets and banking apps.

Application guide

1. Write the learning question before opening Observation / Contextual Inquiry.
2. Select representative users, sessions, tickets or responses.
3. Collect evidence without leading the participant toward your preferred answer.
4. Tag, segment or summarize recurring patterns and contradictions.
5. Turn findings into a problem statement, hypothesis or product decision and link back to the evidence.

PM/TPM usage note: You should be able to lead or independently use this in normal product work.

29. Competitor Analysis

Research method | PM Core

WHAT IT IS / WHAT IT DOES	Compare competing products, alternatives, workflows, price and positioning.
WHEN TO USE IT	For market entry, differentiation and feature discovery.
PRACTICAL EXAMPLE	Compare marketplaces on escrow, seller verification, fees and disputes.

Application guide

1. Define the market, user, product or decision boundary.
2. Gather customer, competitor, financial and operational evidence.
3. Apply the framework to make explicit choices rather than a long wish list.
4. Align stakeholders on what is in and out of focus.
5. Translate the strategy into outcomes, metrics, themes and roadmap bets.

PM/TPM usage note: You should be able to lead or independently use this in normal product work.

30. Usability Testing

Research method | PM Core

WHAT IT IS / WHAT IT DOES	Test whether users can complete important tasks with a product or prototype.
WHEN TO USE IT	Before launch and when UX data suggests friction.
PRACTICAL EXAMPLE	Five new users attempt KYC while the PM records confusion and errors.

Application guide

1. Write the learning question before opening Usability Testing.
2. Select representative users, sessions, tickets or responses.
3. Collect evidence without leading the participant toward your preferred answer.
4. Tag, segment or summarize recurring patterns and contradictions.
5. Turn findings into a problem statement, hypothesis or product decision and link back to the evidence.

PM/TPM usage note: You should be able to lead or independently use this in normal product work.

31. Review Mining

Research method | PM Core

WHAT IT IS / WHAT IT DOES	Analyze app reviews, social comments and competitor complaints for recurring needs.
WHEN TO USE IT	As supplementary discovery evidence.
PRACTICAL EXAMPLE	Competitor reviews repeatedly complain about delayed withdrawals.

Application guide

1. Write the learning question before opening Review Mining.
2. Select representative users, sessions, tickets or responses.
3. Collect evidence without leading the participant toward your preferred answer.
4. Tag, segment or summarize recurring patterns and contradictions.
5. Turn findings into a problem statement, hypothesis or product decision and link back to the evidence.

PM/TPM usage note: You should be able to lead or independently use this in normal product work.

PART 3

Whiteboarding, Workshops & Diagramming

These tools make product thinking visible and help teams align around flows, systems and decisions.

IN THIS PART	Miro, FigJam, Lucidspark, Mural, Whimsical, Excalidraw, Lucidchart, Draw.io / diagrams.net, Mermaid, PlantUML

32. Miro

Collaborative whiteboard | Both

WHAT IT IS / WHAT IT DOES	Run workshops, journey maps, brainstorming, story maps and diagrams.
WHEN TO USE IT	For cross-functional collaboration around a shared visual space.

PRACTICAL EXAMPLE	Run a payment-failure workshop with causes, evidence, ideas and next experiments.

Application guide

1. State the workshop or diagram objective at the top of the board.
2. Create only the sections needed for the conversation or flow.
3. Add input collaboratively, then group duplicates and related ideas.
4. Mark decisions, unknowns, dependencies and owners visually.
5. Move final decisions into the durable PRD, roadmap or delivery system.

PM/TPM usage note: Both PM and TPM roles benefit from this; the required technical depth depends on the product and team.

33. FigJam

Collaborative whiteboard | Both

WHAT IT IS / WHAT IT DOES	Brainstorm, map flows and collaborate beside Figma design work.
WHEN TO USE IT	When product and design already work in the Figma ecosystem.
PRACTICAL EXAMPLE	Map onboarding stages and link each stage to the Figma prototype.

Application guide

1. State the workshop or diagram objective at the top of the board.
2. Create only the sections needed for the conversation or flow.
3. Add input collaboratively, then group duplicates and related ideas.
4. Mark decisions, unknowns, dependencies and owners visually.
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34. Lucidspark

Collaborative whiteboard | Both

WHAT IT IS / WHAT IT DOES	Facilitate brainstorming and structured planning workshops.
WHEN TO USE IT	When the organization uses Lucid products.
PRACTICAL EXAMPLE	Run impact-vs-effort prioritization with remote stakeholders.

Application guide

1. State the workshop or diagram objective at the top of the board.
2. Create only the sections needed for the conversation or flow.
3. Add input collaboratively, then group duplicates and related ideas.
4. Mark decisions, unknowns, dependencies and owners visually.
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PM/TPM usage note: Both PM and TPM roles benefit from this; the required technical depth depends on the product and team.

35. Mural

Collaborative whiteboard | Both

WHAT IT IS / WHAT IT DOES	Facilitate distributed workshops and team alignment.

WHEN TO USE IT	For structured remote facilitation.
PRACTICAL EXAMPLE	Use a service blueprint to align product, support and operations on refunds.

Application guide

1. State the workshop or diagram objective at the top of the board.
2. Create only the sections needed for the conversation or flow.
3. Add input collaboratively, then group duplicates and related ideas.
4. Mark decisions, unknowns, dependencies and owners visually.
5. Move final decisions into the durable PRD, roadmap or delivery system.

PM/TPM usage note: Both PM and TPM roles benefit from this; the required technical depth depends on the product and team.

36. Whimsical

Diagramming/whiteboard tool | Both

WHAT IT IS / WHAT IT DOES	Create fast flowcharts, wireframes and mind maps.
WHEN TO USE IT	When speed and clean simple diagrams matter.
PRACTICAL EXAMPLE	Map transfer success, insufficient balance and provider-failure branches.

Application guide

1. State the workshop or diagram objective at the top of the board.
2. Create only the sections needed for the conversation or flow.
3. Add input collaboratively, then group duplicates and related ideas.
4. Mark decisions, unknowns, dependencies and owners visually.
5. Move final decisions into the durable PRD, roadmap or delivery system.

PM/TPM usage note: Both PM and TPM roles benefit from this; the required technical depth depends on the product and team.

37. Excalidraw

Lightweight diagramming | TPM Core

WHAT IT IS / WHAT IT DOES	Create quick hand-drawn system and process diagrams.
WHEN TO USE IT	During fast technical conversations.
PRACTICAL EXAMPLE	Sketch App → API Gateway → Payment Service → Provider.

Application guide

1. State the workshop or diagram objective at the top of the board.
2. Create only the sections needed for the conversation or flow.
3. Add input collaboratively, then group duplicates and related ideas.
4. Mark decisions, unknowns, dependencies and owners visually.
5. Move final decisions into the durable PRD, roadmap or delivery system.

PM/TPM usage note: A Technical PM should be comfortable discussing and applying this with engineering; a general PM should understand the concept.

38. Lucidchart

Diagramming software | TPM Core

WHAT IT IS / WHAT IT DOES	Create polished process, architecture, flow and entity diagrams.
WHEN TO USE IT	For formal documentation that should stay readable over time.
PRACTICAL EXAMPLE	Document checkout frontend, backend, gateway, database and notifications.

Application guide

1. State the workshop or diagram objective at the top of the board.
2. Create only the sections needed for the conversation or flow.
3. Add input collaboratively, then group duplicates and related ideas.
4. Mark decisions, unknowns, dependencies and owners visually.
5. Move final decisions into the durable PRD, roadmap or delivery system.

PM/TPM usage note: A Technical PM should be comfortable discussing and applying this with engineering; a general PM should understand the concept.

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39. Draw.io / diagrams.net

Diagramming software | TPM Core

WHAT IT IS / WHAT IT DOES	Create free flowcharts and architecture diagrams.
WHEN TO USE IT	When a capable no-cost diagramming tool is needed.
PRACTICAL EXAMPLE	Create a KYC integration map across provider and internal services.

Application guide

1. State the workshop or diagram objective at the top of the board.
2. Create only the sections needed for the conversation or flow.
3. Add input collaboratively, then group duplicates and related ideas.
4. Mark decisions, unknowns, dependencies and owners visually.
5. Move final decisions into the durable PRD, roadmap or delivery system.

PM/TPM usage note: A Technical PM should be comfortable discussing and applying this with engineering; a general PM should understand the concept.

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40. Mermaid

Text-based diagramming | TPM Core

WHAT IT IS / WHAT IT DOES	Create versionable diagrams from plain text.
WHEN TO USE IT	When diagrams should live in Markdown or repositories.
PRACTICAL EXAMPLE	Create a sequence diagram for App → API → Provider → Webhook → Ledger.

Application guide

1. State the workshop or diagram objective at the top of the board.
2. Create only the sections needed for the conversation or flow.
3. Add input collaboratively, then group duplicates and related ideas.
4. Mark decisions, unknowns, dependencies and owners visually.
5. Move final decisions into the durable PRD, roadmap or delivery system.

PM/TPM usage note: A Technical PM should be comfortable discussing and applying this with engineering; a general PM should understand the concept.

41. PlantUML

Text-based modeling | TPM Core

WHAT IT IS / WHAT IT DOES	Create sequence, component and activity diagrams from text.
WHEN TO USE IT	For technical teams using diagrams-as-code and UML-style notation.
PRACTICAL EXAMPLE	Document login across frontend, auth service, OTP provider and database.

Application guide

1. State the workshop or diagram objective at the top of the board.
2. Create only the sections needed for the conversation or flow.
3. Add input collaboratively, then group duplicates and related ideas.
4. Mark decisions, unknowns, dependencies and owners visually.
5. Move final decisions into the durable PRD, roadmap or delivery system.

PM/TPM usage note: A Technical PM should be comfortable discussing and applying this with engineering; a general PM should understand the concept.

PART 4

Market, Business & Product Strategy

These frameworks connect user value to market conditions, business viability and strategic choices.

IN THIS PART	SWOT Analysis, PESTLE Analysis, Porter's Five Forces, Business Model Canvas, Lean Canvas, Value Proposition Canvas, TAM / SAM / SOM, Competitor Matrix, Pricing Analysis, Unit Economics, Product Vision, Product Strategy, North Star Metric, OKRs, GIST Planning, Playing to Win

42. SWOT Analysis

Business framework | Both

WHAT IT IS / WHAT IT DOES	Assess strengths, weaknesses, opportunities and threats.
WHEN TO USE IT	During strategy reviews, market entry and option comparison.
PRACTICAL EXAMPLE	Strong merchant network, weak trust, open-banking opportunity, regulatory threat.

Application guide

1. Define the market, user, product or decision boundary.
2. Gather customer, competitor, financial and operational evidence.
3. Apply the framework to make explicit choices rather than a long wish list.
4. Align stakeholders on what is in and out of focus.
5. Translate the strategy into outcomes, metrics, themes and roadmap bets.

PM/TPM usage note: Both PM and TPM roles benefit from this; the required technical depth depends on the product and team.

43. PESTLE Analysis

External environment framework | Both

WHAT IT IS / WHAT IT DOES	Analyze political, economic, social, technological, legal and environmental forces.
WHEN TO USE IT	Before entering markets exposed to external change.
PRACTICAL EXAMPLE	Lending analysis includes rates, regulation, data infrastructure and customer behavior.

Application guide

1. Define the market, user, product or decision boundary.
2. Gather customer, competitor, financial and operational evidence.
3. Apply the framework to make explicit choices rather than a long wish list.
4. Align stakeholders on what is in and out of focus.
5. Translate the strategy into outcomes, metrics, themes and roadmap bets.

PM/TPM usage note: Both PM and TPM roles benefit from this; the required technical depth depends on the product and team.

44. Porter's Five Forces

Competitive strategy framework | Both

WHAT IT IS / WHAT IT DOES	Assess rivalry, supplier power, buyer power, substitutes and new entrants.
WHEN TO USE IT	When evaluating market attractiveness and competitive pressure.
PRACTICAL EXAMPLE	Payment processors have supplier power while wallets create substitutes.

Application guide

1. Define the market, user, product or decision boundary.
2. Gather customer, competitor, financial and operational evidence.
3. Apply the framework to make explicit choices rather than a long wish list.
4. Align stakeholders on what is in and out of focus.
5. Translate the strategy into outcomes, metrics, themes and roadmap bets.

PM/TPM usage note: Both PM and TPM roles benefit from this; the required technical depth depends on the product and team.

45. Business Model Canvas

Business model framework | Both

WHAT IT IS / WHAT IT DOES	Map partners, activities, resources, value, channels, segments, costs and revenue.
WHEN TO USE IT	When understanding or redesigning how a business creates and captures value.
PRACTICAL EXAMPLE	Marketplace links buyers/sellers to payments, logistics and transaction fees.

Application guide

1. Define the market, user, product or decision boundary.
2. Gather customer, competitor, financial and operational evidence.
3. Apply the framework to make explicit choices rather than a long wish list.

4. Align stakeholders on what is in and out of focus.
5. Translate the strategy into outcomes, metrics, themes and roadmap bets.

PM/TPM usage note: Both PM and TPM roles benefit from this; the required technical depth depends on the product and team.

46. Lean Canvas

Startup framework | Both

WHAT IT IS / WHAT IT DOES	Capture problem, solution, metrics, value, channels, costs and revenue on one page.
WHEN TO USE IT	For early-stage product/business ideas.
PRACTICAL EXAMPLE	Model a new B2B payment concept before building a full business plan.

Application guide

1. Define the market, user, product or decision boundary.
2. Gather customer, competitor, financial and operational evidence.
3. Apply the framework to make explicit choices rather than a long wish list.
4. Align stakeholders on what is in and out of focus.
5. Translate the strategy into outcomes, metrics, themes and roadmap bets.

PM/TPM usage note: Both PM and TPM roles benefit from this; the required technical depth depends on the product and team.

47. Value Proposition Canvas

Customer-value framework | PM Core

WHAT IT IS / WHAT IT DOES	Match customer jobs, pains and gains to product value.
WHEN TO USE IT	When positioning or product-market fit is unclear.
PRACTICAL EXAMPLE	Vendor “get paid safely” may matter more than storefront decoration.

Application guide

1. Define the market, user, product or decision boundary.
2. Gather customer, competitor, financial and operational evidence.
3. Apply the framework to make explicit choices rather than a long wish list.
4. Align stakeholders on what is in and out of focus.
5. Translate the strategy into outcomes, metrics, themes and roadmap bets.

PM/TPM usage note: You should be able to lead or independently use this in normal product work.

48. TAM / SAM / SOM

Market sizing framework | Both

WHAT IT IS / WHAT IT DOES	Estimate total, serviceable and realistically obtainable market.
WHEN TO USE IT	For business cases, expansion and investment decisions.
PRACTICAL EXAMPLE	TAM all merchants; SAM supported markets; SOM realistically reachable merchants.

Application guide

1. Define the market, user, product or decision boundary.

2. Gather customer, competitor, financial and operational evidence.
3. Apply the framework to make explicit choices rather than a long wish list.
4. Align stakeholders on what is in and out of focus.
5. Translate the strategy into outcomes, metrics, themes and roadmap bets.

PM/TPM usage note: Both PM and TPM roles benefit from this; the required technical depth depends on the product and team.

49. Competitor Matrix

Comparison tool | PM Core

WHAT IT IS / WHAT IT DOES	Compare competitors across capabilities, price, segment and UX.
WHEN TO USE IT	To identify table stakes, differentiation and market gaps.
PRACTICAL EXAMPLE	Compare escrow, fees, delivery, seller tools and support.

Application guide

1. Define the market, user, product or decision boundary.
2. Gather customer, competitor, financial and operational evidence.
3. Apply the framework to make explicit choices rather than a long wish list.
4. Align stakeholders on what is in and out of focus.
5. Translate the strategy into outcomes, metrics, themes and roadmap bets.

PM/TPM usage note: You should be able to lead or independently use this in normal product work.

50. Pricing Analysis

Commercial analysis | Both

WHAT IT IS / WHAT IT DOES	Evaluate pricing models, willingness to pay and revenue behavior.
WHEN TO USE IT	When launching paid plans or changing fees.
PRACTICAL EXAMPLE	Compare flat fee vs percentage fee for small and large merchants.

Application guide

1. Define the market, user, product or decision boundary.
2. Gather customer, competitor, financial and operational evidence.
3. Apply the framework to make explicit choices rather than a long wish list.
4. Align stakeholders on what is in and out of focus.
5. Translate the strategy into outcomes, metrics, themes and roadmap bets.

PM/TPM usage note: Both PM and TPM roles benefit from this; the required technical depth depends on the product and team.

51. Unit Economics

Business analysis | Both

WHAT IT IS / WHAT IT DOES	Evaluate customer-level economics such as CAC, LTV and contribution margin.
WHEN TO USE IT	When judging growth, pricing and business model health.
PRACTICAL EXAMPLE	A low-cost acquisition channel is poor if users never activate or generate margin.

Application guide

1. Define the market, user, product or decision boundary.
2. Gather customer, competitor, financial and operational evidence.
3. Apply the framework to make explicit choices rather than a long wish list.
4. Align stakeholders on what is in and out of focus.
5. Translate the strategy into outcomes, metrics, themes and roadmap bets.

PM/TPM usage note: Both PM and TPM roles benefit from this; the required technical depth depends on the product and team.

52. Product Vision

Strategy artifact | Both

WHAT IT IS / WHAT IT DOES	Describe the future customer state the product aims to create.
WHEN TO USE IT	To align teams on long-term direction.
PRACTICAL EXAMPLE	Make cross-border business payments as simple and predictable as messaging.

Application guide

1. Define the market, user, product or decision boundary.
2. Gather customer, competitor, financial and operational evidence.
3. Apply the framework to make explicit choices rather than a long wish list.
4. Align stakeholders on what is in and out of focus.
5. Translate the strategy into outcomes, metrics, themes and roadmap bets.

PM/TPM usage note: Both PM and TPM roles benefit from this; the required technical depth depends on the product and team.

53. Product Strategy

Strategy system | Both

WHAT IT IS / WHAT IT DOES	Define target customers, differentiated value, choices, capabilities and outcomes.
WHEN TO USE IT	After vision and before detailed roadmap commitments.
PRACTICAL EXAMPLE	Marketplace chooses verified supply, protected payments and fulfillment reliability.

Application guide

1. Define the market, user, product or decision boundary.
2. Gather customer, competitor, financial and operational evidence.
3. Apply the framework to make explicit choices rather than a long wish list.
4. Align stakeholders on what is in and out of focus.
5. Translate the strategy into outcomes, metrics, themes and roadmap bets.

PM/TPM usage note: Both PM and TPM roles benefit from this; the required technical depth depends on the product and team.

54. North Star Metric

Measurement framework | Both

WHAT IT IS / WHAT IT DOES	Choose one metric representing recurring customer value.
WHEN TO USE IT	To align teams around value instead of vanity metrics.
PRACTICAL EXAMPLE	Successful active transacting users instead of app downloads.

Application guide

1. Start with the product question, metric definition and expected user behavior.
2. Verify the event/data instrumentation before interpreting charts.
3. Build the relevant funnel, cohort, segment or dashboard.
4. Compare meaningful segments and time periods; check for data-quality traps.
5. Turn the finding into an action, experiment or follow-up research question.

PM/TPM usage note: Both PM and TPM roles benefit from this; the required technical depth depends on the product and team.

55. OKRs

Goal-setting framework | Both

WHAT IT IS / WHAT IT DOES	Connect qualitative objectives with measurable key results.
WHEN TO USE IT	For quarterly or annual outcome alignment.
PRACTICAL EXAMPLE	Raise payment success from 91% to 97% and cut related tickets 30%.

Application guide

1. Define the market, user, product or decision boundary.
2. Gather customer, competitor, financial and operational evidence.
3. Apply the framework to make explicit choices rather than a long wish list.
4. Align stakeholders on what is in and out of focus.
5. Translate the strategy into outcomes, metrics, themes and roadmap bets.

PM/TPM usage note: Both PM and TPM roles benefit from this; the required technical depth depends on the product and team.

56. GIST Planning

Planning framework | Both

WHAT IT IS / WHAT IT DOES	Connect Goals, Ideas, Step-projects and Tasks.
WHEN TO USE IT	When long fixed roadmaps overcommit to unvalidated solutions.
PRACTICAL EXAMPLE	Break “new onboarding” into smaller experiments for copy, progress and capture.

Application guide

1. Define the market, user, product or decision boundary.
2. Gather customer, competitor, financial and operational evidence.
3. Apply the framework to make explicit choices rather than a long wish list.
4. Align stakeholders on what is in and out of focus.
5. Translate the strategy into outcomes, metrics, themes and roadmap bets.

PM/TPM usage note: Both PM and TPM roles benefit from this; the required technical depth depends on the product and team.

57. Playing to Win

Strategy framework | Both

WHAT IT IS / WHAT IT DOES	Make explicit choices about where to play and how to win.
WHEN TO USE IT	When priorities are too broad or generic.

PRACTICAL EXAMPLE	Target SMEs, win on same-day settlement and transparent fees.

Application guide

1. Define the market, user, product or decision boundary.
2. Gather customer, competitor, financial and operational evidence.
3. Apply the framework to make explicit choices rather than a long wish list.
4. Align stakeholders on what is in and out of focus.
5. Translate the strategy into outcomes, metrics, themes and roadmap bets.

PM/TPM usage note: Both PM and TPM roles benefit from this; the required technical depth depends on the product and team.

PART 5

Prioritization & Decision Tools

These tools help choose what deserves scarce engineering and organizational capacity.

IN THIS PART	RICE, ICE, MoSCoW, Kano Model, Impact vs Effort Matrix, WSJF, Cost of Delay

58. RICE

Prioritization framework | Both

WHAT IT IS / WHAT IT DOES	Score work using Reach × Impact × Confidence ÷ Effort.
WHEN TO USE IT	When comparing initiatives with different reach and effort.
PRACTICAL EXAMPLE	A low-effort checkout fix for 80% of buyers outranks a niche large feature.

Application guide

1. List the candidate initiatives or requirements at the same level of detail.
2. Define the scoring categories and scales before scoring.
3. Score with evidence and involve engineering/design/data where their estimates matter.
4. Rank the work, then challenge the ranking for dependencies, risk and strategic commitments.
5. Record the result and revisit it when assumptions or evidence change.

PM/TPM usage note: Both PM and TPM roles benefit from this; the required technical depth depends on the product and team.

59. ICE

Prioritization framework | Both

WHAT IT IS / WHAT IT DOES	Score ideas by Impact × Confidence × Ease.
WHEN TO USE IT	For quick early-stage ranking when reach data is weak.
PRACTICAL EXAMPLE	Narrow twenty growth ideas to five experiments.

Application guide

1. List the candidate initiatives or requirements at the same level of detail.
2. Define the scoring categories and scales before scoring.
3. Score with evidence and involve engineering/design/data where their estimates matter.
4. Rank the work, then challenge the ranking for dependencies, risk and strategic commitments.
5. Record the result and revisit it when assumptions or evidence change.

PM/TPM usage note: Both PM and TPM roles benefit from this; the required technical depth depends on the product and team.

60. MoSCoW

Scope framework | Both

WHAT IT IS / WHAT IT DOES	Classify requirements as Must, Should, Could and Won't for now.
WHEN TO USE IT	For MVP and release scope.
PRACTICAL EXAMPLE	Payment is Must, saved cards Should, recommendations Could.

Application guide

1. List the candidate initiatives or requirements at the same level of detail.
2. Define the scoring categories and scales before scoring.
3. Score with evidence and involve engineering/design/data where their estimates matter.
4. Rank the work, then challenge the ranking for dependencies, risk and strategic commitments.
5. Record the result and revisit it when assumptions or evidence change.

PM/TPM usage note: Both PM and TPM roles benefit from this; the required technical depth depends on the product and team.

61. Kano Model

Satisfaction framework | PM Core

WHAT IT IS / WHAT IT DOES	Separate basic expectations, performance features and delighters.
WHEN TO USE IT	When customer satisfaction response matters to prioritization.
PRACTICAL EXAMPLE	Secure login is basic; fast settlement performance; smart reconciliation delight.

Application guide

1. List the candidate initiatives or requirements at the same level of detail.
2. Define the scoring categories and scales before scoring.
3. Score with evidence and involve engineering/design/data where their estimates matter.
4. Rank the work, then challenge the ranking for dependencies, risk and strategic commitments.
5. Record the result and revisit it when assumptions or evidence change.

PM/TPM usage note: You should be able to lead or independently use this in normal product work.

62. Impact vs Effort Matrix

Prioritization matrix | Both

WHAT IT IS / WHAT IT DOES	Plot initiatives by expected impact and delivery effort.
WHEN TO USE IT	For intuitive workshops and first-pass ranking.
PRACTICAL EXAMPLE	Fee-copy fix is a quick win; settlement rebuild is high effort/high impact.

Application guide

1. List the candidate initiatives or requirements at the same level of detail.
2. Define the scoring categories and scales before scoring.

3. Score with evidence and involve engineering/design/data where their estimates matter.
4. Rank the work, then challenge the ranking for dependencies, risk and strategic commitments.
5. Record the result and revisit it when assumptions or evidence change.

PM/TPM usage note: Both PM and TPM roles benefit from this; the required technical depth depends on the product and team.

63. WSJF

Lean/Agile prioritization | Both

WHAT IT IS / WHAT IT DOES	Prioritize by Cost of Delay divided by job size.
WHEN TO USE IT	In scaled Agile environments where timing has economic value.
PRACTICAL EXAMPLE	A compliance deadline outranks a larger revenue feature.

Application guide

1. List the candidate initiatives or requirements at the same level of detail.
2. Define the scoring categories and scales before scoring.
3. Score with evidence and involve engineering/design/data where their estimates matter.
4. Rank the work, then challenge the ranking for dependencies, risk and strategic commitments.
5. Record the result and revisit it when assumptions or evidence change.

PM/TPM usage note: Both PM and TPM roles benefit from this; the required technical depth depends on the product and team.

64. Cost of Delay

Economic prioritization | Both

WHAT IT IS / WHAT IT DOES	Estimate value lost by postponing work.
WHEN TO USE IT	When deadlines, risk, competitive windows or losses matter.
PRACTICAL EXAMPLE	Delaying a fraud fix may cost more than delaying a redesign.

Application guide

1. List the candidate initiatives or requirements at the same level of detail.
2. Define the scoring categories and scales before scoring.
3. Score with evidence and involve engineering/design/data where their estimates matter.
4. Rank the work, then challenge the ranking for dependencies, risk and strategic commitments.
5. Record the result and revisit it when assumptions or evidence change.

PM/TPM usage note: Both PM and TPM roles benefit from this; the required technical depth depends on the product and team.

PART 6

Product Documentation & Requirements

These artifacts translate product intent into clear, testable expectations.

IN THIS PART	PRD (Product Requirements Document), BRD (Business Requirements Document), MRD (Market Requirements Document), Feature Document / Feature Spec, User Stories, Acceptance Criteria, Product Brief, Business Case, RFC (Request for Comments), Release Notes, API Requirements, Technical Requirements, Decision Log, Notion, Confluence, Google Docs, Microsoft Word, Coda, Slite

65. PRD (Product Requirements Document)

Requirements document | Both

WHAT IT IS / WHAT IT DOES	Define problem, goals, users, scope, behavior, constraints, metrics and rollout.
WHEN TO USE IT	For meaningful product work needing a durable source of truth.
PRACTICAL EXAMPLE	Saved Beneficiary PRD covers rules, security, edge states, analytics and rollout.

Application guide

1. Start with the problem, user, goal and evidence rather than the proposed feature.
2. Write scope, behavior, rules, edge cases, constraints and success measures at the right level.
3. Link supporting designs, research, analytics and technical references.
4. Review with the people who must build, test, operate or approve it.
5. Resolve comments, record decisions and keep one controlled source of truth.

PM/TPM usage note: Both PM and TPM roles benefit from this; the required technical depth depends on the product and team.

66. BRD (Business Requirements Document)

Business document | Both

WHAT IT IS / WHAT IT DOES	Capture business objectives, stakeholders, high-level needs and value.
WHEN TO USE IT	In enterprise settings before detailed product design.
PRACTICAL EXAMPLE	Automated reconciliation must reduce manual finance work by 60%.

Application guide

1. Start with the problem, user, goal and evidence rather than the proposed feature.
2. Write scope, behavior, rules, edge cases, constraints and success measures at the right level.
3. Link supporting designs, research, analytics and technical references.
4. Review with the people who must build, test, operate or approve it.
5. Resolve comments, record decisions and keep one controlled source of truth.

PM/TPM usage note: Both PM and TPM roles benefit from this; the required technical depth depends on the product and team.

67. MRD (Market Requirements Document)

Market document | PM Core

WHAT IT IS / WHAT IT DOES	Describe market opportunity, segments, needs and competitive requirements.
WHEN TO USE IT	For market-entry or portfolio decisions.
PRACTICAL EXAMPLE	SME cross-border payments MRD covers corridors, fees and settlement expectations.

Application guide

1. Start with the problem, user, goal and evidence rather than the proposed feature.
2. Write scope, behavior, rules, edge cases, constraints and success measures at the right level.
3. Link supporting designs, research, analytics and technical references.

4. Review with the people who must build, test, operate or approve it.
5. Resolve comments, record decisions and keep one controlled source of truth.

PM/TPM usage note: You should be able to lead or independently use this in normal product work.

68. Feature Document / Feature Spec

Requirements document | Both

WHAT IT IS / WHAT IT DOES	Define one feature in enough detail for design, engineering and QA.
WHEN TO USE IT	When a full PRD is unnecessary or is decomposed by feature.
PRACTICAL EXAMPLE	Refund status defines Pending, Processing, Completed and Failed states.

Application guide

1. Start with the problem, user, goal and evidence rather than the proposed feature.
2. Write scope, behavior, rules, edge cases, constraints and success measures at the right level.
3. Link supporting designs, research, analytics and technical references.
4. Review with the people who must build, test, operate or approve it.
5. Resolve comments, record decisions and keep one controlled source of truth.

PM/TPM usage note: Both PM and TPM roles benefit from this; the required technical depth depends on the product and team.

69. User Stories

Agile requirement format | Both

WHAT IT IS / WHAT IT DOES	Describe a need from the user perspective and its value.
WHEN TO USE IT	To break requirements into delivery-sized units.
PRACTICAL EXAMPLE	As a buyer, I want refund status so I know when to expect money.

Application guide

1. Start with the problem, user, goal and evidence rather than the proposed feature.
2. Write scope, behavior, rules, edge cases, constraints and success measures at the right level.
3. Link supporting designs, research, analytics and technical references.
4. Review with the people who must build, test, operate or approve it.
5. Resolve comments, record decisions and keep one controlled source of truth.

PM/TPM usage note: Both PM and TPM roles benefit from this; the required technical depth depends on the product and team.

70. Acceptance Criteria

Testable requirement | Both

WHAT IT IS / WHAT IT DOES	Define the observable conditions for accepting a story or feature.
WHEN TO USE IT	Whenever ambiguity could produce different interpretations.
PRACTICAL EXAMPLE	Given sufficient balance, transfer creates one transaction and confirmation reference.

Application guide

1. Start with the problem, user, goal and evidence rather than the proposed feature.

2. Write scope, behavior, rules, edge cases, constraints and success measures at the right level.
3. Link supporting designs, research, analytics and technical references.
4. Review with the people who must build, test, operate or approve it.
5. Resolve comments, record decisions and keep one controlled source of truth.

PM/TPM usage note: Both PM and TPM roles benefit from this; the required technical depth depends on the product and team.

71. Product Brief

Short product artifact | PM Core

WHAT IT IS / WHAT IT DOES	Summarize opportunity, audience, direction, outcomes and unknowns.
WHEN TO USE IT	For lightweight alignment before full discovery/PRD.
PRACTICAL EXAMPLE	One-page instant vendor settlement proposal with goals, risks and metrics.

Application guide

1. Start with the problem, user, goal and evidence rather than the proposed feature.
2. Write scope, behavior, rules, edge cases, constraints and success measures at the right level.
3. Link supporting designs, research, analytics and technical references.
4. Review with the people who must build, test, operate or approve it.
5. Resolve comments, record decisions and keep one controlled source of truth.

PM/TPM usage note: You should be able to lead or independently use this in normal product work.

72. Business Case

Investment document | Both

WHAT IT IS / WHAT IT DOES	Explain value, cost, alternatives, risk and expected return.
WHEN TO USE IT	For large initiatives, integrations or executive approval.
PRACTICAL EXAMPLE	Compare building dispute tooling with continuing manual support operations.

Application guide

1. Start with the problem, user, goal and evidence rather than the proposed feature.
2. Write scope, behavior, rules, edge cases, constraints and success measures at the right level.
3. Link supporting designs, research, analytics and technical references.
4. Review with the people who must build, test, operate or approve it.
5. Resolve comments, record decisions and keep one controlled source of truth.

PM/TPM usage note: Both PM and TPM roles benefit from this; the required technical depth depends on the product and team.

73. RFC (Request for Comments)

Proposal document | TPM Core

WHAT IT IS / WHAT IT DOES	Share a product/technical proposal for structured review.
WHEN TO USE IT	For significant changes requiring cross-functional technical input.
PRACTICAL EXAMPLE	Move transaction status from polling to webhooks and compare trade-offs.

Application guide

1. Start with the problem, user, goal and evidence rather than the proposed feature.
2. Write scope, behavior, rules, edge cases, constraints and success measures at the right level.
3. Link supporting designs, research, analytics and technical references.
4. Review with the people who must build, test, operate or approve it.
5. Resolve comments, record decisions and keep one controlled source of truth.

PM/TPM usage note: A Technical PM should be comfortable discussing and applying this with engineering; a general PM should understand the concept.

74. Release Notes

Communication artifact | Both

WHAT IT IS / WHAT IT DOES	Explain what shipped, changed, fixed and any action required.
WHEN TO USE IT	For meaningful releases needing stakeholder/customer visibility.
PRACTICAL EXAMPLE	Refund tracking added and payment retry handling improved.

Application guide

1. Start with the problem, user, goal and evidence rather than the proposed feature.
2. Write scope, behavior, rules, edge cases, constraints and success measures at the right level.
3. Link supporting designs, research, analytics and technical references.
4. Review with the people who must build, test, operate or approve it.
5. Resolve comments, record decisions and keep one controlled source of truth.

PM/TPM usage note: Both PM and TPM roles benefit from this; the required technical depth depends on the product and team.

75. API Requirements

Technical product artifact | TPM Core

WHAT IT IS / WHAT IT DOES	Define product expectations for an API or integration.
WHEN TO USE IT	Before engineering builds or integrates services.
PRACTICAL EXAMPLE	Payout API needs create, status, webhook, idempotency and failure reasons.

Application guide

1. Start from the user/system use case and identify the systems that must communicate.
2. Read the API contract: method, endpoint, parameters, schemas, authentication and errors.
3. Configure a safe development or staging environment and credentials.
4. Send/test normal, validation, authentication, retry and failure scenarios.
5. Document mismatches, edge cases, reliability expectations and the final integration behavior.

PM/TPM usage note: A Technical PM should be comfortable discussing and applying this with engineering; a general PM should understand the concept.

76. Technical Requirements

Technical product artifact | TPM Core

WHAT IT IS / WHAT IT DOES	Define measurable non-functional and technical constraints.

WHEN TO USE IT	When latency, scale, security or compatibility affects the outcome.
PRACTICAL EXAMPLE	95% of transaction-status requests respond in under 500 ms.

Application guide

1. Start with the problem, user, goal and evidence rather than the proposed feature.
2. Write scope, behavior, rules, edge cases, constraints and success measures at the right level.
3. Link supporting designs, research, analytics and technical references.
4. Review with the people who must build, test, operate or approve it.
5. Resolve comments, record decisions and keep one controlled source of truth.

PM/TPM usage note: A Technical PM should be comfortable discussing and applying this with engineering; a general PM should understand the concept.

77. Decision Log

Governance artifact | Both

WHAT IT IS / WHAT IT DOES	Record important decisions, options, rationale, owner and date.
WHEN TO USE IT	When teams repeatedly revisit why choices were made.
PRACTICAL EXAMPLE	Record why KYC provider A was selected and when it should be reviewed.

Application guide

1. Start with the problem, user, goal and evidence rather than the proposed feature.
2. Write scope, behavior, rules, edge cases, constraints and success measures at the right level.
3. Link supporting designs, research, analytics and technical references.
4. Review with the people who must build, test, operate or approve it.
5. Resolve comments, record decisions and keep one controlled source of truth.

PM/TPM usage note: Both PM and TPM roles benefit from this; the required technical depth depends on the product and team.

78. Notion

Documentation/workspace software | Both

WHAT IT IS / WHAT IT DOES	Create product docs, wikis, databases and lightweight planning spaces.
WHEN TO USE IT	For flexible collaborative documentation.
PRACTICAL EXAMPLE	Create a Product Hub for strategy, PRDs, research, metrics and decisions.

Application guide

1. Start with the problem, user, goal and evidence rather than the proposed feature.
2. Write scope, behavior, rules, edge cases, constraints and success measures at the right level.
3. Link supporting designs, research, analytics and technical references.
4. Review with the people who must build, test, operate or approve it.
5. Resolve comments, record decisions and keep one controlled source of truth.

PM/TPM usage note: Both PM and TPM roles benefit from this; the required technical depth depends on the product and team.

79. Confluence

Documentation/wiki software | Both

WHAT IT IS / WHAT IT DOES	Maintain structured team knowledge closely linked to Jira.
WHEN TO USE IT	When product and engineering work in the Atlassian ecosystem.
PRACTICAL EXAMPLE	Jira epic links to a Confluence PRD with diagrams and release criteria.

Application guide

1. Start with the problem, user, goal and evidence rather than the proposed feature.
2. Write scope, behavior, rules, edge cases, constraints and success measures at the right level.
3. Link supporting designs, research, analytics and technical references.
4. Review with the people who must build, test, operate or approve it.
5. Resolve comments, record decisions and keep one controlled source of truth.

PM/TPM usage note: Both PM and TPM roles benefit from this; the required technical depth depends on the product and team.

80. Google Docs

Collaborative document software | Both

WHAT IT IS / WHAT IT DOES	Draft and review PRDs, research and proposals in real time.
WHEN TO USE IT	When easy collaboration and sharing matter.
PRACTICAL EXAMPLE	Run async PRD review with engineering, design, QA and compliance comments.

Application guide

1. Start with the problem, user, goal and evidence rather than the proposed feature.
2. Write scope, behavior, rules, edge cases, constraints and success measures at the right level.
3. Link supporting designs, research, analytics and technical references.
4. Review with the people who must build, test, operate or approve it.
5. Resolve comments, record decisions and keep one controlled source of truth.

PM/TPM usage note: Both PM and TPM roles benefit from this; the required technical depth depends on the product and team.

81. Microsoft Word

Document software | Both

WHAT IT IS / WHAT IT DOES	Create formal product and business documents with review controls.
WHEN TO USE IT	When organizations require controlled Word documents.
PRACTICAL EXAMPLE	Prepare an enterprise business case with tracked changes and approval.

Application guide

1. Start with the problem, user, goal and evidence rather than the proposed feature.
2. Write scope, behavior, rules, edge cases, constraints and success measures at the right level.
3. Link supporting designs, research, analytics and technical references.
4. Review with the people who must build, test, operate or approve it.
5. Resolve comments, record decisions and keep one controlled source of truth.

PM/TPM usage note: Both PM and TPM roles benefit from this; the required technical depth depends on the product and team.

82. Coda

Collaborative doc/database software | Both

WHAT IT IS / WHAT IT DOES	Combine narrative docs, structured tables and lightweight workflows.
WHEN TO USE IT	When documentation needs live relational data and automations.
PRACTICAL EXAMPLE	Roadmap pulls owner, status and KPI from one initiatives table.

Application guide

1. Start with the problem, user, goal and evidence rather than the proposed feature.
2. Write scope, behavior, rules, edge cases, constraints and success measures at the right level.
3. Link supporting designs, research, analytics and technical references.
4. Review with the people who must build, test, operate or approve it.
5. Resolve comments, record decisions and keep one controlled source of truth.

PM/TPM usage note: Both PM and TPM roles benefit from this; the required technical depth depends on the product and team.

83. Slite

Knowledge-base software | Both

WHAT IT IS / WHAT IT DOES	Organize simple team documentation and knowledge sharing.
WHEN TO USE IT	For lightweight product/team wikis.
PRACTICAL EXAMPLE	Maintain discovery findings, product principles and process guides.

Application guide

1. Start with the problem, user, goal and evidence rather than the proposed feature.
2. Write scope, behavior, rules, edge cases, constraints and success measures at the right level.
3. Link supporting designs, research, analytics and technical references.
4. Review with the people who must build, test, operate or approve it.
5. Resolve comments, record decisions and keep one controlled source of truth.

PM/TPM usage note: Both PM and TPM roles benefit from this; the required technical depth depends on the product and team.

PART 7

Roadmapping & Product Planning Software

Roadmaps communicate direction, sequencing and confidence without turning every idea into a fixed promise.

IN THIS PART	Productboard, Aha!, Roadmunk, Jira Product Discovery, ProductPlan, airfocus, Jira (Roadmap/Timeline), Trello (Roadmap), Excel / Google Sheets (Roadmap)

84. Productboard

Product management platform | PM Core

WHAT IT IS / WHAT IT DOES	Connect customer insights, prioritization, objectives and roadmaps.
WHEN TO USE IT	When discovery evidence and roadmapping should live together.
PRACTICAL EXAMPLE	Link repeated refund-status feedback to a Trust initiative and roadmap objective.

Application guide

1. Start from outcomes and strategic themes, not a list of every backlog ticket.
2. Choose the right horizon such as Now/Next/Later or quarterly planning.
3. Add initiatives, owners, dependencies and confidence/status.
4. Create different views for executives and delivery teams without changing the underlying truth.
5. Review the roadmap as learning, capacity and market conditions change.

PM/TPM usage note: You should be able to lead or independently use this in normal product work.

85. Aha!

Product management platform | PM Core

WHAT IT IS / WHAT IT DOES	Manage strategy, ideas, releases, portfolio roadmaps and planning.
WHEN TO USE IT	For structured multi-product or enterprise planning.
PRACTICAL EXAMPLE	Map strategic goals to initiatives while engineering execution remains in Jira.

Application guide

1. Start from outcomes and strategic themes, not a list of every backlog ticket.
2. Choose the right horizon such as Now/Next/Later or quarterly planning.
3. Add initiatives, owners, dependencies and confidence/status.
4. Create different views for executives and delivery teams without changing the underlying truth.
5. Review the roadmap as learning, capacity and market conditions change.

PM/TPM usage note: You should be able to lead or independently use this in normal product work.

86. Roadmunk

Roadmapping software | PM Core

WHAT IT IS / WHAT IT DOES	Create timeline, swimlane and Now/Next/Later roadmaps.
WHEN TO USE IT	When the primary need is stakeholder-friendly visual roadmaps.
PRACTICAL EXAMPLE	Give product teams Now/Next/Later and executives quarterly outcome views.

Application guide

1. Start from outcomes and strategic themes, not a list of every backlog ticket.
2. Choose the right horizon such as Now/Next/Later or quarterly planning.
3. Add initiatives, owners, dependencies and confidence/status.
4. Create different views for executives and delivery teams without changing the underlying truth.
5. Review the roadmap as learning, capacity and market conditions change.

PM/TPM usage note: You should be able to lead or independently use this in normal product work.

87. Jira Product Discovery

Discovery/planning software | PM Core

WHAT IT IS / WHAT IT DOES	Capture ideas, insights, scores and roadmaps before delivery work.
WHEN TO USE IT	When discovery is integrated with Jira.
PRACTICAL EXAMPLE	Score onboarding ideas before creating the engineering epic.

Application guide

1. Start from outcomes and strategic themes, not a list of every backlog ticket.
2. Choose the right horizon such as Now/Next/Later or quarterly planning.
3. Add initiatives, owners, dependencies and confidence/status.
4. Create different views for executives and delivery teams without changing the underlying truth.
5. Review the roadmap as learning, capacity and market conditions change.

PM/TPM usage note: You should be able to lead or independently use this in normal product work.

88. ProductPlan

Roadmapping software | PM Core

WHAT IT IS / WHAT IT DOES	Build visual roadmaps and portfolio views.
WHEN TO USE IT	When roadmap presentation and stakeholder visibility are the main needs.
PRACTICAL EXAMPLE	Show executives strategic themes and teams initiative sequencing.

Application guide

1. Start from outcomes and strategic themes, not a list of every backlog ticket.
2. Choose the right horizon such as Now/Next/Later or quarterly planning.
3. Add initiatives, owners, dependencies and confidence/status.
4. Create different views for executives and delivery teams without changing the underlying truth.
5. Review the roadmap as learning, capacity and market conditions change.

PM/TPM usage note: You should be able to lead or independently use this in normal product work.

89. airfocus

Product management platform | PM Core

WHAT IT IS / WHAT IT DOES	Prioritize ideas, gather feedback and publish roadmaps.
WHEN TO USE IT	For modular product planning and prioritization workflows.
PRACTICAL EXAMPLE	Use weighted scoring for expansion ideas and expose committed initiatives.

Application guide

1. Start from outcomes and strategic themes, not a list of every backlog ticket.
2. Choose the right horizon such as Now/Next/Later or quarterly planning.
3. Add initiatives, owners, dependencies and confidence/status.
4. Create different views for executives and delivery teams without changing the underlying truth.
5. Review the roadmap as learning, capacity and market conditions change.

PM/TPM usage note: You should be able to lead or independently use this in normal product work.

90. Jira (Roadmap/Timeline)

Delivery planning software | Both

WHAT IT IS / WHAT IT DOES	Use epics, releases, timelines and dependencies for implementation planning.
WHEN TO USE IT	When roadmap detail is closely tied to engineering execution.
PRACTICAL EXAMPLE	Show KYC redesign depending on a verification API before a campaign.

Application guide

1. Start from outcomes and strategic themes, not a list of every backlog ticket.
2. Choose the right horizon such as Now/Next/Later or quarterly planning.
3. Add initiatives, owners, dependencies and confidence/status.
4. Create different views for executives and delivery teams without changing the underlying truth.
5. Review the roadmap as learning, capacity and market conditions change.

PM/TPM usage note: Both PM and TPM roles benefit from this; the required technical depth depends on the product and team.

91. Trello (Roadmap)

Kanban planning software | PM Core

WHAT IT IS / WHAT IT DOES	Create lightweight Now/Next/Later boards using lists and cards.
WHEN TO USE IT	For small teams without advanced dependency needs.
PRACTICAL EXAMPLE	Now onboarding fixes; Next payout; Later loyalty.

Application guide

1. Start from outcomes and strategic themes, not a list of every backlog ticket.
2. Choose the right horizon such as Now/Next/Later or quarterly planning.
3. Add initiatives, owners, dependencies and confidence/status.
4. Create different views for executives and delivery teams without changing the underlying truth.
5. Review the roadmap as learning, capacity and market conditions change.

PM/TPM usage note: You should be able to lead or independently use this in normal product work.

92. Excel / Google Sheets (Roadmap)

Spreadsheet planning | Both

WHAT IT IS / WHAT IT DOES	Create customizable roadmap and initiative trackers.
WHEN TO USE IT	When flexibility or portability matters more than specialized software.
PRACTICAL EXAMPLE	Quarterly tracker with objective, initiative, owner, RICE score and dependency.

Application guide

1. Start from outcomes and strategic themes, not a list of every backlog ticket.
2. Choose the right horizon such as Now/Next/Later or quarterly planning.
3. Add initiatives, owners, dependencies and confidence/status.

4. Create different views for executives and delivery teams without changing the underlying truth.
5. Review the roadmap as learning, capacity and market conditions change.

PM/TPM usage note: Both PM and TPM roles benefit from this; the required technical depth depends on the product and team.

PART 8

UX, UI, Wireframing & Prototyping

PMs should be able to understand flows, states and usability even when a designer owns visual execution.

IN THIS PART	Figma, Sketch, Adobe XD, Framer, Balsamiq, Axure RP, ProtoPie, Wireframing

93. Figma

UI/UX design platform | Both

WHAT IT IS / WHAT IT DOES	Create and review interfaces, components and interactive prototypes.
WHEN TO USE IT	From early wireframes through final design handoff.
PRACTICAL EXAMPLE	Review transfer screens for loading, insufficient balance, validation and failure.

Application guide

1. Define the user goal and complete end-to-end flow first.
2. Review or create the main screens and information hierarchy.
3. Add loading, empty, validation, permission, failure and recovery states.
4. Prototype and test the riskiest interactions before engineering investment.
5. Link the approved behavior and design to requirements and delivery tickets.

PM/TPM usage note: Both PM and TPM roles benefit from this; the required technical depth depends on the product and team.

94. Sketch

UI design software | PM Core

WHAT IT IS / WHAT IT DOES	Create interface designs and prototypes on macOS.
WHEN TO USE IT	When the design organization uses Sketch.
PRACTICAL EXAMPLE	Ensure checkout includes validation and recovery states before build.

Application guide

1. Define the user goal and complete end-to-end flow first.
2. Review or create the main screens and information hierarchy.
3. Add loading, empty, validation, permission, failure and recovery states.
4. Prototype and test the riskiest interactions before engineering investment.
5. Link the approved behavior and design to requirements and delivery tickets.

PM/TPM usage note: You should be able to lead or independently use this in normal product work.

95. Adobe XD

UI/UX prototyping software | PM Core

WHAT IT IS / WHAT IT DOES	Create wireframes and clickable prototypes.
WHEN TO USE IT	Mainly for teams with existing XD workflows.
PRACTICAL EXAMPLE	Prototype a redesigned login and OTP recovery flow.

Application guide

1. Define the user goal and complete end-to-end flow first.
2. Review or create the main screens and information hierarchy.
3. Add loading, empty, validation, permission, failure and recovery states.
4. Prototype and test the riskiest interactions before engineering investment.
5. Link the approved behavior and design to requirements and delivery tickets.

PM/TPM usage note: You should be able to lead or independently use this in normal product work.

96. Framer

Interactive design/web tool | PM Core

WHAT IT IS / WHAT IT DOES	Create high-fidelity responsive prototypes and web experiences.
WHEN TO USE IT	When realistic interaction and responsiveness are important.
PRACTICAL EXAMPLE	Build a realistic landing-page experiment before launch.

Application guide

1. Define the user goal and complete end-to-end flow first.
2. Review or create the main screens and information hierarchy.
3. Add loading, empty, validation, permission, failure and recovery states.
4. Prototype and test the riskiest interactions before engineering investment.
5. Link the approved behavior and design to requirements and delivery tickets.

PM/TPM usage note: You should be able to lead or independently use this in normal product work.

97. Balsamiq

Low-fidelity wireframing | PM Core

WHAT IT IS / WHAT IT DOES	Create intentionally simple wireframes focused on structure and flow.
WHEN TO USE IT	Early discovery before visual polish should influence thinking.
PRACTICAL EXAMPLE	Sketch vendor onboarding before investing in detailed Figma design.

Application guide

1. Define the user goal and complete end-to-end flow first.
2. Review or create the main screens and information hierarchy.
3. Add loading, empty, validation, permission, failure and recovery states.
4. Prototype and test the riskiest interactions before engineering investment.
5. Link the approved behavior and design to requirements and delivery tickets.

PM/TPM usage note: You should be able to lead or independently use this in normal product work.

98. Axure RP

Advanced prototyping tool | PM Core

WHAT IT IS / WHAT IT DOES	Build complex prototypes with logic, variables and dynamic states.
WHEN TO USE IT	When validation needs richer interactions than simple click-throughs.
PRACTICAL EXAMPLE	Prototype a loan form with fields changing by employment type.

Application guide

1. Define the user goal and complete end-to-end flow first.
2. Review or create the main screens and information hierarchy.
3. Add loading, empty, validation, permission, failure and recovery states.
4. Prototype and test the riskiest interactions before engineering investment.
5. Link the approved behavior and design to requirements and delivery tickets.

PM/TPM usage note: You should be able to lead or independently use this in normal product work.

99. ProtoPie

Advanced interaction prototyping | PM Core

WHAT IT IS / WHAT IT DOES	Prototype detailed gestures, mobile interactions and micro-interactions.
WHEN TO USE IT	When animation or device interaction needs realistic validation.
PRACTICAL EXAMPLE	Prototype swipe, haptics and animated card confirmation.

Application guide

1. Define the user goal and complete end-to-end flow first.
2. Review or create the main screens and information hierarchy.
3. Add loading, empty, validation, permission, failure and recovery states.
4. Prototype and test the riskiest interactions before engineering investment.
5. Link the approved behavior and design to requirements and delivery tickets.

PM/TPM usage note: You should be able to lead or independently use this in normal product work.

100. Wireframing

Design method | Both

WHAT IT IS / WHAT IT DOES	Represent layout, hierarchy and flow without final visual styling.
WHEN TO USE IT	Early in design to test structure cheaply.
PRACTICAL EXAMPLE	Wireframe checkout before final UI work.

Application guide

1. Define the user goal and complete end-to-end flow first.
2. Review or create the main screens and information hierarchy.
3. Add loading, empty, validation, permission, failure and recovery states.
4. Prototype and test the riskiest interactions before engineering investment.

5. Link the approved behavior and design to requirements and delivery tickets.

PM/TPM usage note: Both PM and TPM roles benefit from this; the required technical depth depends on the product and team.

PART 9

Agile Delivery & Work Management

These systems turn product decisions into executable work and make delivery visible.

IN THIS PART	Jira, Azure Boards, Linear, Asana, Trello, ClickUp, Monday.com, Shortcut, YouTrack

101. Jira

Agile delivery software | Both

WHAT IT IS / WHAT IT DOES	Manage epics, stories, tasks, bugs, sprints, releases and workflows.
WHEN TO USE IT	For software teams needing structured Agile delivery and traceability.
PRACTICAL EXAMPLE	Escrow epic contains hold funds, release, dispute and notification stories.

Application guide

1. Structure work into initiatives/epics and testable stories or tasks.
2. Order the backlog by value, risk, dependency and readiness.
3. Refine upcoming work with engineering and QA until ambiguity is manageable.
4. Track progress, blockers, scope changes and release dependencies.
5. Use reviews and retrospectives to learn rather than treating Done as the final outcome.

PM/TPM usage note: Both PM and TPM roles benefit from this; the required technical depth depends on the product and team.

102. Azure Boards

Agile delivery software | Both

WHAT IT IS / WHAT IT DOES	Plan and track epics, features, stories, tasks and bugs in Azure DevOps.
WHEN TO USE IT	When engineering delivery is centered on Microsoft Azure DevOps.
PRACTICAL EXAMPLE	Track a payments release from Epic to Feature to Story to Task and defect.

Application guide

1. Structure work into initiatives/epics and testable stories or tasks.
2. Order the backlog by value, risk, dependency and readiness.
3. Refine upcoming work with engineering and QA until ambiguity is manageable.
4. Track progress, blockers, scope changes and release dependencies.
5. Use reviews and retrospectives to learn rather than treating Done as the final outcome.

PM/TPM usage note: Both PM and TPM roles benefit from this; the required technical depth depends on the product and team.

103. Linear

Issue/project tracking software | Both

WHAT IT IS / WHAT IT DOES	Manage engineering issues, cycles, projects and initiatives with a lightweight workflow.
WHEN TO USE IT	For fast product/engineering teams preferring less process overhead.
PRACTICAL EXAMPLE	Track a three-week login reliability project and linked bugs.

Application guide

1. Structure work into initiatives/epics and testable stories or tasks.
2. Order the backlog by value, risk, dependency and readiness.
3. Refine upcoming work with engineering and QA until ambiguity is manageable.
4. Track progress, blockers, scope changes and release dependencies.
5. Use reviews and retrospectives to learn rather than treating Done as the final outcome.

PM/TPM usage note: Both PM and TPM roles benefit from this; the required technical depth depends on the product and team.

104. Asana

Work management software | PM Core

WHAT IT IS / WHAT IT DOES	Manage cross-functional projects, dependencies, milestones and owners.
WHEN TO USE IT	When delivery includes marketing, legal, operations or business teams.
PRACTICAL EXAMPLE	Coordinate engineering release, legal approval, support training and campaign.

Application guide

1. Structure work into initiatives/epics and testable stories or tasks.
2. Order the backlog by value, risk, dependency and readiness.
3. Refine upcoming work with engineering and QA until ambiguity is manageable.
4. Track progress, blockers, scope changes and release dependencies.
5. Use reviews and retrospectives to learn rather than treating Done as the final outcome.

PM/TPM usage note: You should be able to lead or independently use this in normal product work.

105. Trello

Kanban work management | Both

WHAT IT IS / WHAT IT DOES	Track simple work using boards, lists and cards.
WHEN TO USE IT	For small teams and straightforward status workflows.
PRACTICAL EXAMPLE	Backlog → Ready → In Progress → QA → Done.

Application guide

1. Structure work into initiatives/epics and testable stories or tasks.
2. Order the backlog by value, risk, dependency and readiness.
3. Refine upcoming work with engineering and QA until ambiguity is manageable.
4. Track progress, blockers, scope changes and release dependencies.
5. Use reviews and retrospectives to learn rather than treating Done as the final outcome.

PM/TPM usage note: Both PM and TPM roles benefit from this; the required technical depth depends on the product and team.

106. ClickUp

Work management platform | Both

WHAT IT IS / WHAT IT DOES	Manage tasks, docs, goals, projects and dashboards.
WHEN TO USE IT	When teams want flexible workflows across business and product.
PRACTICAL EXAMPLE	Track release tasks, documentation and stakeholder milestones together.

Application guide

1. Structure work into initiatives/epics and testable stories or tasks.
2. Order the backlog by value, risk, dependency and readiness.
3. Refine upcoming work with engineering and QA until ambiguity is manageable.
4. Track progress, blockers, scope changes and release dependencies.
5. Use reviews and retrospectives to learn rather than treating Done as the final outcome.

PM/TPM usage note: Both PM and TPM roles benefit from this; the required technical depth depends on the product and team.

107. Monday.com

Work management platform | PM Core

WHAT IT IS / WHAT IT DOES	Build visual project and operations boards.
WHEN TO USE IT	For launches and operations-heavy cross-functional work.
PRACTICAL EXAMPLE	Track app submission, engineering, campaign, support and compliance readiness.

Application guide

1. Structure work into initiatives/epics and testable stories or tasks.
2. Order the backlog by value, risk, dependency and readiness.
3. Refine upcoming work with engineering and QA until ambiguity is manageable.
4. Track progress, blockers, scope changes and release dependencies.
5. Use reviews and retrospectives to learn rather than treating Done as the final outcome.

PM/TPM usage note: You should be able to lead or independently use this in normal product work.

108. Shortcut

Software project management | Both

WHAT IT IS / WHAT IT DOES	Manage stories, epics and iterations for development teams.
WHEN TO USE IT	As a Jira alternative focused on software delivery.
PRACTICAL EXAMPLE	Plan search improvement across backend, filters and analytics events.

Application guide

1. Structure work into initiatives/epics and testable stories or tasks.
2. Order the backlog by value, risk, dependency and readiness.
3. Refine upcoming work with engineering and QA until ambiguity is manageable.
4. Track progress, blockers, scope changes and release dependencies.

5. Use reviews and retrospectives to learn rather than treating Done as the final outcome.

PM/TPM usage note: Both PM and TPM roles benefit from this; the required technical depth depends on the product and team.

109. YouTrack

Issue/project tracking software | Both

WHAT IT IS / WHAT IT DOES	Manage issues, agile boards and customizable workflows.
WHEN TO USE IT	For teams using JetBrains tooling or flexible issue tracking.
PRACTICAL EXAMPLE	Track API bugs, frontend stories and release blockers.

Application guide

1. Structure work into initiatives/epics and testable stories or tasks.
2. Order the backlog by value, risk, dependency and readiness.
3. Refine upcoming work with engineering and QA until ambiguity is manageable.
4. Track progress, blockers, scope changes and release dependencies.
5. Use reviews and retrospectives to learn rather than treating Done as the final outcome.

PM/TPM usage note: Both PM and TPM roles benefit from this; the required technical depth depends on the product and team.

PART 10

Azure DevOps Suite

A TPM should understand how planning, code, build, test and package services connect even when engineers operate them.

IN THIS PART	Azure Boards, Azure Repos, Azure Pipelines, Azure Test Plans, Azure Artifacts

110. Azure Boards

Azure DevOps service | Both

WHAT IT IS / WHAT IT DOES	Plan and track work items, backlogs and sprints.
WHEN TO USE IT	For delivery planning within Azure DevOps.
PRACTICAL EXAMPLE	Check blocked stories before release readiness.

Application guide

1. Structure work into initiatives/epics and testable stories or tasks.
2. Order the backlog by value, risk, dependency and readiness.
3. Refine upcoming work with engineering and QA until ambiguity is manageable.
4. Track progress, blockers, scope changes and release dependencies.
5. Use reviews and retrospectives to learn rather than treating Done as the final outcome.

PM/TPM usage note: Both PM and TPM roles benefit from this; the required technical depth depends on the product and team.

111. Azure Repos

Source control service | TPM Core

WHAT IT IS / WHAT IT DOES	Host Git repositories and pull-request workflows.
WHEN TO USE IT	When engineering stores code in Azure DevOps.

PRACTICAL EXAMPLE	Confirm the payment retry PR is merged into the release branch.

Application guide

1. Identify the repository/service and the work item or product change being implemented.
2. Understand the branch, commit and review status without micromanaging code.
3. Check automated tests, reviews and security/build checks.
4. Confirm the change is merged into the correct release path and environment.
5. Use commit/PR/release references for traceability during QA or incidents.

PM/TPM usage note: A Technical PM should be comfortable discussing and applying this with engineering; a general PM should understand the concept.

112. Azure Pipelines

CI/CD service | TPM Core

WHAT IT IS / WHAT IT DOES	Build, test and deploy applications automatically.
WHEN TO USE IT	To understand release progress and failed deployment stages.
PRACTICAL EXAMPLE	Integration tests fail before staging, blocking the release.

Application guide

1. Identify the pipeline, artifact/version and target environment.
2. Follow the stages from build through automated tests and deployment gates.
3. Inspect failed stages with engineering rather than assuming the whole feature is broken.
4. Confirm approvals, migrations/configuration and deployment outcome.
5. Monitor the release in production and know the rollback or disable path.

PM/TPM usage note: A Technical PM should be comfortable discussing and applying this with engineering; a general PM should understand the concept.

113. Azure Test Plans

Test management service | TPM Core

WHAT IT IS / WHAT IT DOES	Manage manual, exploratory and structured test cases.
WHEN TO USE IT	When QA testing is organized inside Azure DevOps.
PRACTICAL EXAMPLE	Review whether critical payment and refund cases passed before production.

Application guide

1. Derive test scenarios from requirements, acceptance criteria, risk and past incidents.
2. Prepare the correct environment, test data, browser/device or API setup.
3. Execute happy path, validation, permissions, failure and recovery cases.
4. Log defects with reproducible steps, expected/actual behavior and evidence.
5. Retest fixes and use results as an explicit input to release readiness.

PM/TPM usage note: A Technical PM should be comfortable discussing and applying this with engineering; a general PM should understand the concept.

114. Azure Artifacts

Package management service | TPM Core

WHAT IT IS / WHAT IT DOES	Store and share versioned software packages and dependencies.
WHEN TO USE IT	To understand internal package dependencies that affect delivery.
PRACTICAL EXAMPLE	Mobile release depends on a new internal authentication SDK package.

Application guide

1. Identify the repository/service and the work item or product change being implemented.
2. Understand the branch, commit and review status without micromanaging code.
3. Check automated tests, reviews and security/build checks.
4. Confirm the change is merged into the correct release path and environment.
5. Use commit/PR/release references for traceability during QA or incidents.

PM/TPM usage note: A Technical PM should be comfortable discussing and applying this with engineering; a general PM should understand the concept.

PART 11

Scrum & Agile Operating Tools

These are working mechanisms rather than software applications. They help teams plan, inspect and adapt.

IN THIS PART	Product Backlog, Sprint Backlog, Sprint Planning, Daily Standup, Backlog Refinement, Sprint Review, Retrospective, Definition of Ready, Definition of Done, Story Points, Velocity, Burndown Chart, Capacity Planning

115. Product Backlog

Agile artifact | Both

WHAT IT IS / WHAT IT DOES	Maintain the ordered list of potential product work.
WHEN TO USE IT	Continuously as evidence and priorities change.
PRACTICAL EXAMPLE	Validated checkout fixes sit above speculative loyalty ideas.

Application guide

1. Structure work into initiatives/epics and testable stories or tasks.
2. Order the backlog by value, risk, dependency and readiness.
3. Refine upcoming work with engineering and QA until ambiguity is manageable.
4. Track progress, blockers, scope changes and release dependencies.
5. Use reviews and retrospectives to learn rather than treating Done as the final outcome.

PM/TPM usage note: Both PM and TPM roles benefit from this; the required technical depth depends on the product and team.

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116. Sprint Backlog

Scrum artifact | Both

WHAT IT IS / WHAT IT DOES	Represent work selected for the current sprint and the plan to deliver it.
WHEN TO USE IT	During sprint execution.

PRACTICAL EXAMPLE	Sprint contains the stories needed for complete vendor onboarding.

Application guide

1. Structure work into initiatives/epics and testable stories or tasks.
2. Order the backlog by value, risk, dependency and readiness.
3. Refine upcoming work with engineering and QA until ambiguity is manageable.
4. Track progress, blockers, scope changes and release dependencies.
5. Use reviews and retrospectives to learn rather than treating Done as the final outcome.

PM/TPM usage note: Both PM and TPM roles benefit from this; the required technical depth depends on the product and team.

117. Sprint Planning

Scrum event | Both

WHAT IT IS / WHAT IT DOES	Agree the sprint goal, selected work and delivery approach.
WHEN TO USE IT	At the start of a sprint.
PRACTICAL EXAMPLE	Exclude a story with an unresolved API dependency rather than overcommit.

Application guide

1. Structure work into initiatives/epics and testable stories or tasks.
2. Order the backlog by value, risk, dependency and readiness.
3. Refine upcoming work with engineering and QA until ambiguity is manageable.
4. Track progress, blockers, scope changes and release dependencies.
5. Use reviews and retrospectives to learn rather than treating Done as the final outcome.

PM/TPM usage note: Both PM and TPM roles benefit from this; the required technical depth depends on the product and team.

118. Daily Standup

Team synchronization | Both

WHAT IT IS / WHAT IT DOES	Inspect progress toward the sprint goal and surface blockers.
WHEN TO USE IT	Daily in many Agile teams.
PRACTICAL EXAMPLE	Backend is blocked by provider credentials and TPM drives follow-up.

Application guide

1. Choose the channel based on urgency and durability of the information.
2. Give context, the decision needed and the owner/action clearly.
3. Use threads/meetings only for discussion that actually needs them.
4. Move permanent requirements and decisions into the team source of truth.
5. Close the loop by confirming owners, dates and unresolved questions.

PM/TPM usage note: Both PM and TPM roles benefit from this; the required technical depth depends on the product and team.

119. Backlog Refinement

Agile practice | Both

WHAT IT IS / WHAT IT DOES	Prepare upcoming work so value, scope and acceptance are understood.

WHEN TO USE IT	Regularly before sprint planning.
PRACTICAL EXAMPLE	Split refund automation into initiation, status, customer visibility and failures.

Application guide

1. Structure work into initiatives/epics and testable stories or tasks.
2. Order the backlog by value, risk, dependency and readiness.
3. Refine upcoming work with engineering and QA until ambiguity is manageable.
4. Track progress, blockers, scope changes and release dependencies.
5. Use reviews and retrospectives to learn rather than treating Done as the final outcome.

PM/TPM usage note: Both PM and TPM roles benefit from this; the required technical depth depends on the product and team.

120. Sprint Review

Scrum event | Both

WHAT IT IS / WHAT IT DOES	Inspect delivered product with stakeholders and adapt priorities.
WHEN TO USE IT	At sprint or increment end.
PRACTICAL EXAMPLE	Demo new KYC flow and capture compliance feedback.

Application guide

1. Choose the channel based on urgency and durability of the information.
2. Give context, the decision needed and the owner/action clearly.
3. Use threads/meetings only for discussion that actually needs them.
4. Move permanent requirements and decisions into the team source of truth.
5. Close the loop by confirming owners, dates and unresolved questions.

PM/TPM usage note: Both PM and TPM roles benefit from this; the required technical depth depends on the product and team.

121. Retrospective

Team improvement event | Both

WHAT IT IS / WHAT IT DOES	Improve team process and collaboration without blame.
WHEN TO USE IT	At regular delivery intervals.
PRACTICAL EXAMPLE	Add API contract review earlier because unclear contracts caused rework.

Application guide

1. Define the product question or decision this framework should support.
2. Collect the minimum evidence or inputs needed; do not score from instinct alone.
3. Apply the framework consistently across the items or problem.
4. Challenge the result with user value, strategy, risk and dependencies.
5. Document the decision, assumptions and what would cause you to revisit it.

PM/TPM usage note: Both PM and TPM roles benefit from this; the required technical depth depends on the product and team.

122. Definition of Ready

Team agreement | Both

WHAT IT IS / WHAT IT DOES	Define minimum conditions for work to enter implementation.
WHEN TO USE IT	When incomplete stories repeatedly enter sprints.
PRACTICAL EXAMPLE	A payment story is not ready until provider dependency and error states are clear.

Application guide

1. Start with the problem, user, goal and evidence rather than the proposed feature.
2. Write scope, behavior, rules, edge cases, constraints and success measures at the right level.
3. Link supporting designs, research, analytics and technical references.
4. Review with the people who must build, test, operate or approve it.
5. Resolve comments, record decisions and keep one controlled source of truth.

PM/TPM usage note: Both PM and TPM roles benefit from this; the required technical depth depends on the product and team.

123. Definition of Done

Team quality agreement | Both

WHAT IT IS / WHAT IT DOES	Define what complete means beyond code written.
WHEN TO USE IT	To maintain consistent delivery quality.
PRACTICAL EXAMPLE	Done includes code review, tests, QA, analytics verification and staging.

Application guide

1. Derive test scenarios from requirements, acceptance criteria, risk and past incidents.
2. Prepare the correct environment, test data, browser/device or API setup.
3. Execute happy path, validation, permissions, failure and recovery cases.
4. Log defects with reproducible steps, expected/actual behavior and evidence.
5. Retest fixes and use results as an explicit input to release readiness.

PM/TPM usage note: Both PM and TPM roles benefit from this; the required technical depth depends on the product and team.

124. Story Points

Relative estimation | Both

WHAT IT IS / WHAT IT DOES	Estimate complexity, uncertainty and effort relative to other work.
WHEN TO USE IT	In teams using relative estimation.
PRACTICAL EXAMPLE	Copy change 1 point; uncertain external integration 8–13 points.

Application guide

1. Define the product question or decision this framework should support.
2. Collect the minimum evidence or inputs needed; do not score from instinct alone.
3. Apply the framework consistently across the items or problem.
4. Challenge the result with user value, strategy, risk and dependencies.
5. Document the decision, assumptions and what would cause you to revisit it.

PM/TPM usage note: Both PM and TPM roles benefit from this; the required technical depth depends on the product and team.

125. Velocity

Delivery metric | Both

WHAT IT IS / WHAT IT DOES	Track how much estimated work a stable team typically completes.
WHEN TO USE IT	For cautious capacity forecasting, not performance ranking.
PRACTICAL EXAMPLE	Use a rolling 30–35 point range for planning.

Application guide

1. Start with the product question, metric definition and expected user behavior.
2. Verify the event/data instrumentation before interpreting charts.
3. Build the relevant funnel, cohort, segment or dashboard.
4. Compare meaningful segments and time periods; check for data-quality traps.
5. Turn the finding into an action, experiment or follow-up research question.

PM/TPM usage note: Both PM and TPM roles benefit from this; the required technical depth depends on the product and team.

126. Burndown Chart

Sprint visualization | Both

WHAT IT IS / WHAT IT DOES	Show remaining sprint work over time.
WHEN TO USE IT	To spot late completion patterns or scope changes.
PRACTICAL EXAMPLE	Flat burndown suggests stories are too large or testing starts too late.

Application guide

1. Start with the product question, metric definition and expected user behavior.
2. Verify the event/data instrumentation before interpreting charts.
3. Build the relevant funnel, cohort, segment or dashboard.
4. Compare meaningful segments and time periods; check for data-quality traps.
5. Turn the finding into an action, experiment or follow-up research question.

PM/TPM usage note: Both PM and TPM roles benefit from this; the required technical depth depends on the product and team.

127. Capacity Planning

Planning method | Both

WHAT IT IS / WHAT IT DOES	Estimate realistic team availability for delivery.
WHEN TO USE IT	Before sprint or release commitments.
PRACTICAL EXAMPLE	Two engineers on leave means scope must reduce.

Application guide

1. Define the product question or decision this framework should support.
2. Collect the minimum evidence or inputs needed; do not score from instinct alone.
3. Apply the framework consistently across the items or problem.
4. Challenge the result with user value, strategy, risk and dependencies.
5. Document the decision, assumptions and what would cause you to revisit it.

PM/TPM usage note: Both PM and TPM roles benefit from this; the required technical depth depends on the product and team.

PART 12

Communication, Collaboration & Productivity

A PM's job is heavily about moving context, decisions and action across people.

IN THIS PART	Slack, Microsoft Teams, Zoom, Google Meet, Loom, Google Workspace, Excel, Google Sheets

128. Slack

Team communication | Both

WHAT IT IS / WHAT IT DOES	Support fast channels, threads, alerts and integrations.
WHEN TO USE IT	For timely coordination rather than permanent requirements storage.
PRACTICAL EXAMPLE	Use incident channel for coordination and Confluence for the postmortem.

Application guide

1. Choose the channel based on urgency and durability of the information.
2. Give context, the decision needed and the owner/action clearly.
3. Use threads/meetings only for discussion that actually needs them.
4. Move permanent requirements and decisions into the team source of truth.
5. Close the loop by confirming owners, dates and unresolved questions.

PM/TPM usage note: Both PM and TPM roles benefit from this; the required technical depth depends on the product and team.

129. Microsoft Teams

Communication/collaboration | Both

WHAT IT IS / WHAT IT DOES	Run chat, channels, meetings and Microsoft 365 collaboration.
WHEN TO USE IT	In Microsoft-centric organizations.
PRACTICAL EXAMPLE	Release meeting in Teams while checklist remains in Azure DevOps.

Application guide

1. Choose the channel based on urgency and durability of the information.
2. Give context, the decision needed and the owner/action clearly.
3. Use threads/meetings only for discussion that actually needs them.
4. Move permanent requirements and decisions into the team source of truth.
5. Close the loop by confirming owners, dates and unresolved questions.

PM/TPM usage note: Both PM and TPM roles benefit from this; the required technical depth depends on the product and team.

130. Zoom

Video meeting software | Both

WHAT IT IS / WHAT IT DOES	Run remote interviews, workshops, demos and stakeholder sessions.
WHEN TO USE IT	When synchronous video adds value.

PRACTICAL EXAMPLE	Run moderated usability tests with screen sharing.

Application guide

1. Confirm recording/transcription policy and participant consent where required.
2. Set the meeting or research objective and use Zoom to capture the conversation.
3. Review the transcript or generated summary for important errors.
4. Extract decisions, evidence and action items with owners.
5. Store durable output in the research repository, PRD, decision log or delivery system.

PM/TPM usage note: Both PM and TPM roles benefit from this; the required technical depth depends on the product and team.

131. Google Meet

Video meeting software | Both

WHAT IT IS / WHAT IT DOES	Run browser-based customer and team meetings.
WHEN TO USE IT	In Google Workspace environments.
PRACTICAL EXAMPLE	Conduct discovery interview and link notes to research repository.

Application guide

1. Confirm recording/transcription policy and participant consent where required.
2. Set the meeting or research objective and use Google Meet to capture the conversation.
3. Review the transcript or generated summary for important errors.
4. Extract decisions, evidence and action items with owners.
5. Store durable output in the research repository, PRD, decision log or delivery system.

PM/TPM usage note: Both PM and TPM roles benefit from this; the required technical depth depends on the product and team.

132. Loom

Async video software | Both

WHAT IT IS / WHAT IT DOES	Record short screen explanations, demos and bug walkthroughs.
WHEN TO USE IT	When visual context helps but a meeting is unnecessary.
PRACTICAL EXAMPLE	Record a four-minute checkout bug reproduction for engineering.

Application guide

1. Choose the channel based on urgency and durability of the information.
2. Give context, the decision needed and the owner/action clearly.
3. Use threads/meetings only for discussion that actually needs them.
4. Move permanent requirements and decisions into the team source of truth.
5. Close the loop by confirming owners, dates and unresolved questions.

PM/TPM usage note: Both PM and TPM roles benefit from this; the required technical depth depends on the product and team.

133. Google Workspace

Productivity suite | Both

WHAT IT IS / WHAT IT DOES	Use Docs, Sheets, Slides, Drive and Meet for common product work.

WHEN TO USE IT	For collaborative everyday product operations.
PRACTICAL EXAMPLE	Research in Docs, analysis in Sheets and stakeholder update in Slides.

Application guide

1. Choose the channel based on urgency and durability of the information.
2. Give context, the decision needed and the owner/action clearly.
3. Use threads/meetings only for discussion that actually needs them.
4. Move permanent requirements and decisions into the team source of truth.
5. Close the loop by confirming owners, dates and unresolved questions.

PM/TPM usage note: Both PM and TPM roles benefit from this; the required technical depth depends on the product and team.

134. Excel

Spreadsheet software | Both

WHAT IT IS / WHAT IT DOES	Analyze data, build models, calculate priority and track structured work.
WHEN TO USE IT	Whenever formulas, pivots, scenarios or tabular planning are useful.
PRACTICAL EXAMPLE	Calculate RICE and model revenue under three pricing options.

Application guide

1. Define the audience and decision the dashboard must support.
2. Connect to governed, approved data sources and metric definitions.
3. Build only the visualizations that answer the question.
4. Validate totals and filters with data owners before publishing.
5. Set ownership, refresh cadence and permissions so the dashboard stays trustworthy.

PM/TPM usage note: Both PM and TPM roles benefit from this; the required technical depth depends on the product and team.

135. Google Sheets

Collaborative spreadsheet | Both

WHAT IT IS / WHAT IT DOES	Run shared analysis, models, trackers and lightweight dashboards.
WHEN TO USE IT	When multiple people need live structured data.
PRACTICAL EXAMPLE	Track beta customers, activation, feedback and follow-up owner.

Application guide

1. Define the audience and decision the dashboard must support.
2. Connect to governed, approved data sources and metric definitions.
3. Build only the visualizations that answer the question.
4. Validate totals and filters with data owners before publishing.
5. Set ownership, refresh cadence and permissions so the dashboard stays trustworthy.

PM/TPM usage note: Both PM and TPM roles benefit from this; the required technical depth depends on the product and team.

PART 13

Product Analytics & Metrics

Analytics should answer product questions and measure outcomes, not merely produce dashboards.

IN THIS PART	Amplitude, Mixpanel, Google Analytics 4 (GA4), Heap, Pendo, FullStory, PostHog, AARRR, HEART, Funnel Analysis, Cohort Analysis

136. Amplitude

Product analytics platform | Both

WHAT IT IS / WHAT IT DOES	Analyze event-based funnels, retention, cohorts and feature adoption.
WHEN TO USE IT	When you need to understand in-product behavior after instrumentation.
PRACTICAL EXAMPLE	Build Signup → KYC → Fund → First Transaction funnel by channel.

Application guide

1. Start with the product question, metric definition and expected user behavior.
2. Verify the event/data instrumentation before interpreting charts.
3. Build the relevant funnel, cohort, segment or dashboard.
4. Compare meaningful segments and time periods; check for data-quality traps.
5. Turn the finding into an action, experiment or follow-up research question.

PM/TPM usage note: Both PM and TPM roles benefit from this; the required technical depth depends on the product and team.

137. Mixpanel

Product analytics platform | Both

WHAT IT IS / WHAT IT DOES	Analyze events, funnels, retention, cohorts and journeys.
WHEN TO USE IT	For product behavior and conversion questions.
PRACTICAL EXAMPLE	Compare 7-day retention for users who save beneficiaries vs those who do not.

Application guide

1. Start with the product question, metric definition and expected user behavior.
2. Verify the event/data instrumentation before interpreting charts.
3. Build the relevant funnel, cohort, segment or dashboard.
4. Compare meaningful segments and time periods; check for data-quality traps.
5. Turn the finding into an action, experiment or follow-up research question.

PM/TPM usage note: Both PM and TPM roles benefit from this; the required technical depth depends on the product and team.

138. Google Analytics 4 (GA4)

Web/app analytics | Both

WHAT IT IS / WHAT IT DOES	Measure acquisition, traffic, events and conversion.
WHEN TO USE IT	For marketing-to-product funnel analysis.

PRACTICAL EXAMPLE	Find which campaigns produce completed registration, not only clicks.

Application guide

1. Start with the product question, metric definition and expected user behavior.
2. Verify the event/data instrumentation before interpreting charts.
3. Build the relevant funnel, cohort, segment or dashboard.
4. Compare meaningful segments and time periods; check for data-quality traps.
5. Turn the finding into an action, experiment or follow-up research question.

PM/TPM usage note: Both PM and TPM roles benefit from this; the required technical depth depends on the product and team.

139. Heap

Digital insights platform | PM Core

WHAT IT IS / WHAT IT DOES	Capture broad interaction data and define events for later analysis.
WHEN TO USE IT	When teams want retroactive behavioral exploration.
PRACTICAL EXAMPLE	Define “clicked fee details” and compare downstream conversion.

Application guide

1. Start with the product question, metric definition and expected user behavior.
2. Verify the event/data instrumentation before interpreting charts.
3. Build the relevant funnel, cohort, segment or dashboard.
4. Compare meaningful segments and time periods; check for data-quality traps.
5. Turn the finding into an action, experiment or follow-up research question.

PM/TPM usage note: You should be able to lead or independently use this in normal product work.

140. Pendo

Product analytics/adoption platform | PM Core

WHAT IT IS / WHAT IT DOES	Measure feature use and deliver in-app guidance.
WHEN TO USE IT	Especially in SaaS where adoption and onboarding matter.
PRACTICAL EXAMPLE	Guide admins who have not configured permissions after seven days.

Application guide

1. Start with the product question, metric definition and expected user behavior.
2. Verify the event/data instrumentation before interpreting charts.
3. Build the relevant funnel, cohort, segment or dashboard.
4. Compare meaningful segments and time periods; check for data-quality traps.
5. Turn the finding into an action, experiment or follow-up research question.

PM/TPM usage note: You should be able to lead or independently use this in normal product work.

141. FullStory

Session replay platform | Both

WHAT IT IS / WHAT IT DOES	Replay user sessions to understand friction and technical UX problems.
WHEN TO USE IT	For qualitative diagnosis of funnel drop-off or confusing behavior.
PRACTICAL EXAMPLE	See an unresponsive mobile checkout control in abandoned sessions.

Application guide

1. Start with the product question, metric definition and expected user behavior.
2. Verify the event/data instrumentation before interpreting charts.
3. Build the relevant funnel, cohort, segment or dashboard.
4. Compare meaningful segments and time periods; check for data-quality traps.
5. Turn the finding into an action, experiment or follow-up research question.

PM/TPM usage note: Both PM and TPM roles benefit from this; the required technical depth depends on the product and team.

142. PostHog

Product analytics platform | Both

WHAT IT IS / WHAT IT DOES	Combine analytics, replay, flags and experiments in a developer-friendly stack.
WHEN TO USE IT	When teams want integrated behavioral analysis and release control.
PRACTICAL EXAMPLE	Roll out search to 20% and measure conversion in the same platform.

Application guide

1. Start with the product question, metric definition and expected user behavior.
2. Verify the event/data instrumentation before interpreting charts.
3. Build the relevant funnel, cohort, segment or dashboard.
4. Compare meaningful segments and time periods; check for data-quality traps.
5. Turn the finding into an action, experiment or follow-up research question.

PM/TPM usage note: Both PM and TPM roles benefit from this; the required technical depth depends on the product and team.

143. AARRR

Growth metrics framework | PM Core

WHAT IT IS / WHAT IT DOES	Structure Acquisition, Activation, Retention, Referral and Revenue.
WHEN TO USE IT	To identify the weakest growth stage.
PRACTICAL EXAMPLE	Many signups but few first transactions means activation needs attention.

Application guide

1. Start with the product question, metric definition and expected user behavior.
2. Verify the event/data instrumentation before interpreting charts.
3. Build the relevant funnel, cohort, segment or dashboard.
4. Compare meaningful segments and time periods; check for data-quality traps.
5. Turn the finding into an action, experiment or follow-up research question.

PM/TPM usage note: You should be able to lead or independently use this in normal product work.

144. HEART

UX metrics framework | PM Core

WHAT IT IS / WHAT IT DOES	Measure Happiness, Engagement, Adoption, Retention and Task Success.
WHEN TO USE IT	For structured UX outcome measurement.
PRACTICAL EXAMPLE	Checkout task success uses completion, time and errors plus satisfaction.

Application guide

1. Start with the product question, metric definition and expected user behavior.
2. Verify the event/data instrumentation before interpreting charts.
3. Build the relevant funnel, cohort, segment or dashboard.
4. Compare meaningful segments and time periods; check for data-quality traps.
5. Turn the finding into an action, experiment or follow-up research question.

PM/TPM usage note: You should be able to lead or independently use this in normal product work.

145. Funnel Analysis

Analytics method | Both

WHAT IT IS / WHAT IT DOES	Measure conversion through an ordered sequence of user steps.
WHEN TO USE IT	For onboarding, checkout, KYC, purchase and subscription journeys.
PRACTICAL EXAMPLE	10k visits → 5k signup → 4k KYC → 2.5k fund → 1.2k transact.

Application guide

1. Start with the product question, metric definition and expected user behavior.
2. Verify the event/data instrumentation before interpreting charts.
3. Build the relevant funnel, cohort, segment or dashboard.
4. Compare meaningful segments and time periods; check for data-quality traps.
5. Turn the finding into an action, experiment or follow-up research question.

PM/TPM usage note: Both PM and TPM roles benefit from this; the required technical depth depends on the product and team.

146. Cohort Analysis

Analytics method | Both

WHAT IT IS / WHAT IT DOES	Compare groups sharing a start date or characteristic over time.
WHEN TO USE IT	For retention, release impact and segment quality.
PRACTICAL EXAMPLE	Compare weekly signup cohorts after onboarding changes.

Application guide

1. Start with the product question, metric definition and expected user behavior.
2. Verify the event/data instrumentation before interpreting charts.
3. Build the relevant funnel, cohort, segment or dashboard.

4. Compare meaningful segments and time periods; check for data-quality traps.
5. Turn the finding into an action, experiment or follow-up research question.

PM/TPM usage note: Both PM and TPM roles benefit from this; the required technical depth depends on the product and team.

PART 14

SQL, Databases & Data Access

Technical PMs benefit from being able to inspect product data directly and understand where it lives.

IN THIS PART	SQL, SELECT, WHERE, GROUP BY, JOIN, PostgreSQL, MySQL, SQL Server, Oracle Database, MongoDB, DynamoDB, Cassandra, Firebase Firestore, DBeaver, pgAdmin, MySQL Workbench, DataGrip

147. SQL

Query language | TPM Core

WHAT IT IS / WHAT IT DOES	Retrieve, filter, aggregate and join relational product data.
WHEN TO USE IT	When approved direct data access can answer a product or incident question.
PRACTICAL EXAMPLE	Find failed transactions by provider and day.

Application guide

1. Translate the business question into the exact population and metric needed.
2. Identify the correct tables, keys, dates and definitions.
3. Write the smallest read-only query using filters, aggregates and joins as required.
4. Validate row counts and a sample of records before trusting the result.
5. Save the query and communicate the conclusion with assumptions and data limitations.

PM/TPM usage note: A Technical PM should be comfortable discussing and applying this with engineering; a general PM should understand the concept.

148. SELECT

SQL operation | TPM Core

WHAT IT IS / WHAT IT DOES	Choose the fields or expressions returned by a query.
WHEN TO USE IT	In almost every read query.
PRACTICAL EXAMPLE	SELECT transaction_id, status, provider FROM transactions.

Application guide

1. Translate the business question into the exact population and metric needed.
2. Identify the correct tables, keys, dates and definitions.
3. Write the smallest read-only query using filters, aggregates and joins as required.
4. Validate row counts and a sample of records before trusting the result.
5. Save the query and communicate the conclusion with assumptions and data limitations.

PM/TPM usage note: A Technical PM should be comfortable discussing and applying this with engineering; a general PM should understand the concept.

149. WHERE

SQL operation | TPM Core

WHAT IT IS / WHAT IT DOES	Filter records to the relevant population.
WHEN TO USE IT	When queries need a specific segment, status or date range.
PRACTICAL EXAMPLE	Filter failed transactions from the last seven days.

Application guide

1. Translate the business question into the exact population and metric needed.
2. Identify the correct tables, keys, dates and definitions.
3. Write the smallest read-only query using filters, aggregates and joins as required.
4. Validate row counts and a sample of records before trusting the result.
5. Save the query and communicate the conclusion with assumptions and data limitations.

PM/TPM usage note: A Technical PM should be comfortable discussing and applying this with engineering; a general PM should understand the concept.

150. GROUP BY

SQL operation | TPM Core

WHAT IT IS / WHAT IT DOES	Aggregate results across categories or periods.
WHEN TO USE IT	For counts, sums and averages by segment.
PRACTICAL EXAMPLE	Count failures by payment provider.

Application guide

1. Translate the business question into the exact population and metric needed.
2. Identify the correct tables, keys, dates and definitions.
3. Write the smallest read-only query using filters, aggregates and joins as required.
4. Validate row counts and a sample of records before trusting the result.
5. Save the query and communicate the conclusion with assumptions and data limitations.

PM/TPM usage note: A Technical PM should be comfortable discussing and applying this with engineering; a general PM should understand the concept.

151. JOIN

SQL operation | TPM Core

WHAT IT IS / WHAT IT DOES	Combine related records from multiple tables.
WHEN TO USE IT	When the question spans users, orders, transactions or other entities.
PRACTICAL EXAMPLE	Join transactions to users to compare failure by segment.

Application guide

1. Translate the business question into the exact population and metric needed.
2. Identify the correct tables, keys, dates and definitions.
3. Write the smallest read-only query using filters, aggregates and joins as required.
4. Validate row counts and a sample of records before trusting the result.
5. Save the query and communicate the conclusion with assumptions and data limitations.

PM/TPM usage note: A Technical PM should be comfortable discussing and applying this with engineering; a general PM should understand the concept.

152. PostgreSQL

Relational database | TPM Core

WHAT IT IS / WHAT IT DOES	Store structured application and transactional data.
WHEN TO USE IT	When the product stack uses PostgreSQL.
PRACTICAL EXAMPLE	Analyze related orders, users and payments through IDs.

Application guide

1. Learn the database role in the product architecture and the main entities it stores.
2. Use approved, preferably read-only, access and the team's standard client.
3. Inspect schemas/collections and understand keys or relationships before querying.
4. Never modify production data casually; route changes through engineering/DBA controls.
5. Connect database findings back to product behavior, incidents or analytics.

PM/TPM usage note: A Technical PM should be comfortable discussing and applying this with engineering; a general PM should understand the concept.

153. MySQL

Relational database | TPM Core

WHAT IT IS / WHAT IT DOES	Store and query structured relational data.
WHEN TO USE IT	When MySQL is part of the architecture.
PRACTICAL EXAMPLE	Analyze account creation and activation tables.

Application guide

1. Learn the database role in the product architecture and the main entities it stores.
2. Use approved, preferably read-only, access and the team's standard client.
3. Inspect schemas/collections and understand keys or relationships before querying.
4. Never modify production data casually; route changes through engineering/DBA controls.
5. Connect database findings back to product behavior, incidents or analytics.

PM/TPM usage note: A Technical PM should be comfortable discussing and applying this with engineering; a general PM should understand the concept.

154. SQL Server

Relational database | TPM Core

WHAT IT IS / WHAT IT DOES	Microsoft enterprise relational database.
WHEN TO USE IT	In Microsoft/enterprise stacks.
PRACTICAL EXAMPLE	Store B2B customer, invoice and payment records.

Application guide

1. Learn the database role in the product architecture and the main entities it stores.
2. Use approved, preferably read-only, access and the team's standard client.
3. Inspect schemas/collections and understand keys or relationships before querying.
4. Never modify production data casually; route changes through engineering/DBA controls.
5. Connect database findings back to product behavior, incidents or analytics.

PM/TPM usage note: A Technical PM should be comfortable discussing and applying this with engineering; a general PM should understand the concept.

155. Oracle Database

Relational database | TPM Core

WHAT IT IS / WHAT IT DOES	Enterprise relational database common in large and legacy systems.
WHEN TO USE IT	When integrating with enterprise/core systems.
PRACTICAL EXAMPLE	A bank API may ultimately source records from Oracle systems.

Application guide

1. Learn the database role in the product architecture and the main entities it stores.
2. Use approved, preferably read-only, access and the team's standard client.
3. Inspect schemas/collections and understand keys or relationships before querying.
4. Never modify production data casually; route changes through engineering/DBA controls.
5. Connect database findings back to product behavior, incidents or analytics.

PM/TPM usage note: A Technical PM should be comfortable discussing and applying this with engineering; a general PM should understand the concept.

156. MongoDB

NoSQL document database | TPM Core

WHAT IT IS / WHAT IT DOES	Store flexible JSON-like documents.
WHEN TO USE IT	For document-oriented product data and evolving schemas.
PRACTICAL EXAMPLE	A content/feed service stores post documents in MongoDB.

Application guide

1. Learn the database role in the product architecture and the main entities it stores.
2. Use approved, preferably read-only, access and the team's standard client.
3. Inspect schemas/collections and understand keys or relationships before querying.
4. Never modify production data casually; route changes through engineering/DBA controls.
5. Connect database findings back to product behavior, incidents or analytics.

PM/TPM usage note: A Technical PM should be comfortable discussing and applying this with engineering; a general PM should understand the concept.

157. DynamoDB

Managed NoSQL database | TPM Core

WHAT IT IS / WHAT IT DOES	Provide scalable key-value/document storage on AWS.
WHEN TO USE IT	For high-scale workloads designed around key access patterns.
PRACTICAL EXAMPLE	Session or event service uses predictable low-latency key lookups.

Application guide

1. Learn the database role in the product architecture and the main entities it stores.
2. Use approved, preferably read-only, access and the team's standard client.
3. Inspect schemas/collections and understand keys or relationships before querying.
4. Never modify production data casually; route changes through engineering/DBA controls.

5. Connect database findings back to product behavior, incidents or analytics.

PM/TPM usage note: A Technical PM should be comfortable discussing and applying this with engineering; a general PM should understand the concept.

158. Cassandra

Distributed NoSQL database | TPM Core

WHAT IT IS / WHAT IT DOES	Provide highly available distributed storage for large write workloads.
WHEN TO USE IT	For systems needing massive distributed throughput.
PRACTICAL EXAMPLE	Messaging/event platform stores distributed high-volume data.

Application guide

1. Learn the database role in the product architecture and the main entities it stores.
2. Use approved, preferably read-only, access and the team's standard client.
3. Inspect schemas/collections and understand keys or relationships before querying.
4. Never modify production data casually; route changes through engineering/DBA controls.
5. Connect database findings back to product behavior, incidents or analytics.

PM/TPM usage note: A Technical PM should be comfortable discussing and applying this with engineering; a general PM should understand the concept.

159. Firebase Firestore

Managed NoSQL database | TPM Core

WHAT IT IS / WHAT IT DOES	Store real-time document data for web and mobile apps.
WHEN TO USE IT	For mobile/web products needing managed real-time storage.
PRACTICAL EXAMPLE	Lightweight chat uses real-time Firestore updates.

Application guide

1. Learn the database role in the product architecture and the main entities it stores.
2. Use approved, preferably read-only, access and the team's standard client.
3. Inspect schemas/collections and understand keys or relationships before querying.
4. Never modify production data casually; route changes through engineering/DBA controls.
5. Connect database findings back to product behavior, incidents or analytics.

PM/TPM usage note: A Technical PM should be comfortable discussing and applying this with engineering; a general PM should understand the concept.

160. DBeaver

Database client | TPM Core

WHAT IT IS / WHAT IT DOES	Connect to and query many database systems visually.
WHEN TO USE IT	When approved read access is available.
PRACTICAL EXAMPLE	Inspect staging transaction tables without command-line tooling.

Application guide

1. Learn the database role in the product architecture and the main entities it stores.

2. Use approved, preferably read-only, access and the team's standard client.
3. Inspect schemas/collections and understand keys or relationships before querying.
4. Never modify production data casually; route changes through engineering/DBA controls.
5. Connect database findings back to product behavior, incidents or analytics.

PM/TPM usage note: A Technical PM should be comfortable discussing and applying this with engineering; a general PM should understand the concept.

161. pgAdmin

PostgreSQL client | TPM Core

WHAT IT IS / WHAT IT DOES	Browse and query PostgreSQL databases.
WHEN TO USE IT	When the team uses Postgres and pgAdmin.
PRACTICAL EXAMPLE	Check whether webhook events created expected status rows.

Application guide

1. Learn the database role in the product architecture and the main entities it stores.
2. Use approved, preferably read-only, access and the team's standard client.
3. Inspect schemas/collections and understand keys or relationships before querying.
4. Never modify production data casually; route changes through engineering/DBA controls.
5. Connect database findings back to product behavior, incidents or analytics.

PM/TPM usage note: A Technical PM should be comfortable discussing and applying this with engineering; a general PM should understand the concept.

162. MySQL Workbench

MySQL client | TPM Core

WHAT IT IS / WHAT IT DOES	Browse and query MySQL databases.
WHEN TO USE IT	When the team uses MySQL.
PRACTICAL EXAMPLE	Analyze order records for a failed fulfillment workflow.

Application guide

1. Learn the database role in the product architecture and the main entities it stores.
2. Use approved, preferably read-only, access and the team's standard client.
3. Inspect schemas/collections and understand keys or relationships before querying.
4. Never modify production data casually; route changes through engineering/DBA controls.
5. Connect database findings back to product behavior, incidents or analytics.

PM/TPM usage note: A Technical PM should be comfortable discussing and applying this with engineering; a general PM should understand the concept.

163. DataGrip

Database IDE | TPM Core

WHAT IT IS / WHAT IT DOES	Navigate and query multiple database types in a developer-friendly client.
WHEN TO USE IT	When technical teams use JetBrains tools.

PRACTICAL EXAMPLE	Investigate whether duplicate orders share an idempotency key.

Application guide

1. Learn the database role in the product architecture and the main entities it stores.
2. Use approved, preferably read-only, access and the team's standard client.
3. Inspect schemas/collections and understand keys or relationships before querying.
4. Never modify production data casually; route changes through engineering/DBA controls.
5. Connect database findings back to product behavior, incidents or analytics.

PM/TPM usage note: A Technical PM should be comfortable discussing and applying this with engineering; a general PM should understand the concept.

PART 15

Business Intelligence & Data Visualization

BI tools create reusable, governed views of product and business performance.

IN THIS PART	Power BI, Tableau, Looker, Looker Studio, Metabase, Redash, Mode

164. Power BI

BI platform | Both

WHAT IT IS / WHAT IT DOES	Build dashboards and analytical reports from multiple data sources.
WHEN TO USE IT	In Microsoft-heavy organizations and recurring KPI reporting.
PRACTICAL EXAMPLE	Dashboard active users, volume, success rate, revenue and support rate.

Application guide

1. Define the audience and decision the dashboard must support.
2. Connect to governed, approved data sources and metric definitions.
3. Build only the visualizations that answer the question.
4. Validate totals and filters with data owners before publishing.
5. Set ownership, refresh cadence and permissions so the dashboard stays trustworthy.

PM/TPM usage note: Both PM and TPM roles benefit from this; the required technical depth depends on the product and team.

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165. Tableau

BI platform | Both

WHAT IT IS / WHAT IT DOES	Create interactive visual analysis and dashboards.
WHEN TO USE IT	For enterprise and exploratory analytics.
PRACTICAL EXAMPLE	Explore retention by segment and acquisition channel.

Application guide

1. Define the audience and decision the dashboard must support.
2. Connect to governed, approved data sources and metric definitions.
3. Build only the visualizations that answer the question.

4. Validate totals and filters with data owners before publishing.
5. Set ownership, refresh cadence and permissions so the dashboard stays trustworthy.

PM/TPM usage note: Both PM and TPM roles benefit from this; the required technical depth depends on the product and team.

166. Looker

BI/data platform | Both

WHAT IT IS / WHAT IT DOES	Build governed metrics and dashboards on a modeled data layer.
WHEN TO USE IT	When teams need consistent metric definitions.
PRACTICAL EXAMPLE	Finance and Product use one governed successful-transaction measure.

Application guide

1. Define the audience and decision the dashboard must support.
2. Connect to governed, approved data sources and metric definitions.
3. Build only the visualizations that answer the question.
4. Validate totals and filters with data owners before publishing.
5. Set ownership, refresh cadence and permissions so the dashboard stays trustworthy.

PM/TPM usage note: Both PM and TPM roles benefit from this; the required technical depth depends on the product and team.

167. Looker Studio

Reporting tool | Both

WHAT IT IS / WHAT IT DOES	Create lightweight dashboards from accessible data sources.
WHEN TO USE IT	For marketing/product reporting, often in Google ecosystems.
PRACTICAL EXAMPLE	Weekly acquisition-to-signup dashboard from GA4 data.

Application guide

1. Define the audience and decision the dashboard must support.
2. Connect to governed, approved data sources and metric definitions.
3. Build only the visualizations that answer the question.
4. Validate totals and filters with data owners before publishing.
5. Set ownership, refresh cadence and permissions so the dashboard stays trustworthy.

PM/TPM usage note: Both PM and TPM roles benefit from this; the required technical depth depends on the product and team.

168. Metabase

BI/analytics tool | Both

WHAT IT IS / WHAT IT DOES	Run no-code or SQL questions and share internal dashboards.
WHEN TO USE IT	For technical startups and internal product analytics.
PRACTICAL EXAMPLE	Dashboard payment failures by provider, bank and hour.

Application guide

1. Define the audience and decision the dashboard must support.
2. Connect to governed, approved data sources and metric definitions.

3. Build only the visualizations that answer the question.
4. Validate totals and filters with data owners before publishing.
5. Set ownership, refresh cadence and permissions so the dashboard stays trustworthy.

PM/TPM usage note: Both PM and TPM roles benefit from this; the required technical depth depends on the product and team.

169. Redash

SQL/dashboard tool | Both

WHAT IT IS / WHAT IT DOES	Query data sources and visualize reusable results.
WHEN TO USE IT	For SQL-oriented internal reporting.
PRACTICAL EXAMPLE	Monitor payout failures by failure reason.

Application guide

1. Define the audience and decision the dashboard must support.
2. Connect to governed, approved data sources and metric definitions.
3. Build only the visualizations that answer the question.
4. Validate totals and filters with data owners before publishing.
5. Set ownership, refresh cadence and permissions so the dashboard stays trustworthy.

PM/TPM usage note: Both PM and TPM roles benefit from this; the required technical depth depends on the product and team.

170. Mode

Analytics platform | Both

WHAT IT IS / WHAT IT DOES	Combine SQL, notebooks and shareable analytical reports.
WHEN TO USE IT	For deeper collaborative product/data analysis.
PRACTICAL EXAMPLE	Assess whether activation improvement is statistically meaningful.

Application guide

1. Define the audience and decision the dashboard must support.
2. Connect to governed, approved data sources and metric definitions.
3. Build only the visualizations that answer the question.
4. Validate totals and filters with data owners before publishing.
5. Set ownership, refresh cadence and permissions so the dashboard stays trustworthy.

PM/TPM usage note: Both PM and TPM roles benefit from this; the required technical depth depends on the product and team.

PART 16

APIs, Integrations & Technical Product Fundamentals

This is core Technical PM territory: understand how systems communicate, what the contract says and how to validate it safely.

IN THIS PART	API (Application Programming Interface), REST, Postman, Swagger / Swagger UI, OpenAPI Specification, Insomnia, Stoplight, Apidog, SoapUI, curl, Endpoint, HTTP Methods, JSON, Headers, API Key Authentication, Bearer Token, OAuth 2.0, JWT, HTTP Status Codes, Webhooks, Idempotency, Rate Limiting, Kong, AWS API Gateway, Azure API Management, Google Apigee

171. API (Application Programming Interface)

Technical concept | TPM Core

WHAT IT IS / WHAT IT DOES	Define a contract that lets software systems request data or actions from one another.
WHEN TO USE IT	Whenever apps, internal services or partners must communicate programmatically.
PRACTICAL EXAMPLE	App sends account details to a verification API and receives account name or an error.

Application guide

1. Start from the user/system use case and identify the systems that must communicate.
2. Read the API contract: method, endpoint, parameters, schemas, authentication and errors.
3. Configure a safe development or staging environment and credentials.
4. Send/test normal, validation, authentication, retry and failure scenarios.
5. Document mismatches, edge cases, reliability expectations and the final integration behavior.

PM/TPM usage note: A Technical PM should be comfortable discussing and applying this with engineering; a general PM should understand the concept.

172. REST

API architectural style | TPM Core

WHAT IT IS / WHAT IT DOES	Organize web APIs around resources and standard HTTP operations.
WHEN TO USE IT	When reading or defining common modern web APIs.
PRACTICAL EXAMPLE	POST /payments creates a payment; GET /payments/{id} gets status.

Application guide

1. Start from the user/system use case and identify the systems that must communicate.
2. Read the API contract: method, endpoint, parameters, schemas, authentication and errors.
3. Configure a safe development or staging environment and credentials.
4. Send/test normal, validation, authentication, retry and failure scenarios.
5. Document mismatches, edge cases, reliability expectations and the final integration behavior.

PM/TPM usage note: A Technical PM should be comfortable discussing and applying this with engineering; a general PM should understand the concept.

173. Postman

API client/testing platform | TPM Core

WHAT IT IS / WHAT IT DOES	Send API requests, manage environments, inspect responses and save tests.
WHEN TO USE IT	For API exploration, QA, integration validation and debugging.
PRACTICAL EXAMPLE	Test POST /payouts in staging, then test invalid bank and insufficient balance.

Application guide

1. Start from the user/system use case and identify the systems that must communicate.

2. Read the API contract: method, endpoint, parameters, schemas, authentication and errors.
3. Configure a safe development or staging environment and credentials.
4. Send/test normal, validation, authentication, retry and failure scenarios.
5. Document mismatches, edge cases, reliability expectations and the final integration behavior.

PM/TPM usage note: A Technical PM should be comfortable discussing and applying this with engineering; a general PM should understand the concept.

174. Swagger / Swagger UI

API documentation tooling | TPM Core

WHAT IT IS / WHAT IT DOES	Present interactive endpoint documentation around an API specification.
WHEN TO USE IT	When engineering exposes API docs for consumers and QA.
PRACTICAL EXAMPLE	Review POST /refunds fields, status codes and error schemas.

Application guide

1. Start from the user/system use case and identify the systems that must communicate.
2. Read the API contract: method, endpoint, parameters, schemas, authentication and errors.
3. Configure a safe development or staging environment and credentials.
4. Send/test normal, validation, authentication, retry and failure scenarios.
5. Document mismatches, edge cases, reliability expectations and the final integration behavior.

PM/TPM usage note: A Technical PM should be comfortable discussing and applying this with engineering; a general PM should understand the concept.

175. OpenAPI Specification

API specification standard | TPM Core

WHAT IT IS / WHAT IT DOES	Describe REST endpoints, schemas, security and responses in machine-readable form.
WHEN TO USE IT	When teams need a shared API contract before or during implementation.
PRACTICAL EXAMPLE	Confirm transaction-status enum contains pending, successful, failed and reversed.

Application guide

1. Start from the user/system use case and identify the systems that must communicate.
2. Read the API contract: method, endpoint, parameters, schemas, authentication and errors.
3. Configure a safe development or staging environment and credentials.
4. Send/test normal, validation, authentication, retry and failure scenarios.
5. Document mismatches, edge cases, reliability expectations and the final integration behavior.

PM/TPM usage note: A Technical PM should be comfortable discussing and applying this with engineering; a general PM should understand the concept.

176. Insomnia

API client | TPM Core

WHAT IT IS / WHAT IT DOES	Send and organize HTTP requests as an alternative to Postman.

WHEN TO USE IT	When the team prefers a simpler developer-oriented API client.
PRACTICAL EXAMPLE	Test login and profile endpoints in staging.

Application guide

1. Start from the user/system use case and identify the systems that must communicate.
2. Read the API contract: method, endpoint, parameters, schemas, authentication and errors.
3. Configure a safe development or staging environment and credentials.
4. Send/test normal, validation, authentication, retry and failure scenarios.
5. Document mismatches, edge cases, reliability expectations and the final integration behavior.

PM/TPM usage note: A Technical PM should be comfortable discussing and applying this with engineering; a general PM should understand the concept.

177. Stoplight

API design/documentation platform | TPM Core

WHAT IT IS / WHAT IT DOES	Design, review, mock and publish APIs around OpenAPI.
WHEN TO USE IT	When API contracts should be agreed before backend implementation.
PRACTICAL EXAMPLE	Frontend uses a mock payouts API while backend development continues.

Application guide

1. Start from the user/system use case and identify the systems that must communicate.
2. Read the API contract: method, endpoint, parameters, schemas, authentication and errors.
3. Configure a safe development or staging environment and credentials.
4. Send/test normal, validation, authentication, retry and failure scenarios.
5. Document mismatches, edge cases, reliability expectations and the final integration behavior.

PM/TPM usage note: A Technical PM should be comfortable discussing and applying this with engineering; a general PM should understand the concept.

178. Apidog

API lifecycle tool | TPM Core

WHAT IT IS / WHAT IT DOES	Combine API design, debugging, tests and documentation.
WHEN TO USE IT	When a team wants one workspace for API design and testing.
PRACTICAL EXAMPLE	Create regression scenarios for order, payment, status and cancellation.

Application guide

1. Start from the user/system use case and identify the systems that must communicate.
2. Read the API contract: method, endpoint, parameters, schemas, authentication and errors.
3. Configure a safe development or staging environment and credentials.
4. Send/test normal, validation, authentication, retry and failure scenarios.
5. Document mismatches, edge cases, reliability expectations and the final integration behavior.

PM/TPM usage note: A Technical PM should be comfortable discussing and applying this with engineering; a general PM should understand the concept.

179. SoapUI

API testing tool | TPM Core

WHAT IT IS / WHAT IT DOES	Test SOAP/XML and REST services, especially enterprise integrations.
WHEN TO USE IT	When a partner or legacy system exposes SOAP services.
PRACTICAL EXAMPLE	Test a bank account-validation WSDL and its fault cases.

Application guide

1. Start from the user/system use case and identify the systems that must communicate.
2. Read the API contract: method, endpoint, parameters, schemas, authentication and errors.
3. Configure a safe development or staging environment and credentials.
4. Send/test normal, validation, authentication, retry and failure scenarios.
5. Document mismatches, edge cases, reliability expectations and the final integration behavior.

PM/TPM usage note: A Technical PM should be comfortable discussing and applying this with engineering; a general PM should understand the concept.

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180. curl

Command-line HTTP client | TPM Core

WHAT IT IS / WHAT IT DOES	Send HTTP requests directly from a terminal.
WHEN TO USE IT	For quick API checks and reproducing examples with engineers.
PRACTICAL EXAMPLE	Call a staging transaction endpoint with an authorization header.

Application guide

1. Start from the user/system use case and identify the systems that must communicate.
2. Read the API contract: method, endpoint, parameters, schemas, authentication and errors.
3. Configure a safe development or staging environment and credentials.
4. Send/test normal, validation, authentication, retry and failure scenarios.
5. Document mismatches, edge cases, reliability expectations and the final integration behavior.

PM/TPM usage note: A Technical PM should be comfortable discussing and applying this with engineering; a general PM should understand the concept.

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181. Endpoint

API concept | TPM Core

WHAT IT IS / WHAT IT DOES	A specific network path that exposes an operation or resource.
WHEN TO USE IT	When discussing the exact capability an API offers.
PRACTICAL EXAMPLE	GET /users/{id} retrieves one user.

Application guide

1. Start from the user/system use case and identify the systems that must communicate.
2. Read the API contract: method, endpoint, parameters, schemas, authentication and errors.
3. Configure a safe development or staging environment and credentials.
4. Send/test normal, validation, authentication, retry and failure scenarios.

5. Document mismatches, edge cases, reliability expectations and the final integration behavior.

PM/TPM usage note: A Technical PM should be comfortable discussing and applying this with engineering; a general PM should understand the concept.

182. HTTP Methods

API concept | TPM Core

WHAT IT IS / WHAT IT DOES	Use GET, POST, PUT, PATCH and DELETE to communicate request intent.
WHEN TO USE IT	When reading and designing REST API contracts.
PRACTICAL EXAMPLE	PATCH /users/123 updates selected profile fields.

Application guide

1. Start from the user/system use case and identify the systems that must communicate.
2. Read the API contract: method, endpoint, parameters, schemas, authentication and errors.
3. Configure a safe development or staging environment and credentials.
4. Send/test normal, validation, authentication, retry and failure scenarios.
5. Document mismatches, edge cases, reliability expectations and the final integration behavior.

PM/TPM usage note: A Technical PM should be comfortable discussing and applying this with engineering; a general PM should understand the concept.

183. JSON

Data format | TPM Core

WHAT IT IS / WHAT IT DOES	Represent structured API requests, responses and events.
WHEN TO USE IT	Whenever modern APIs exchange structured data.
PRACTICAL EXAMPLE	{"amount":5000,"currency":"NGN","status":"pending"}.

Application guide

1. Start from the user/system use case and identify the systems that must communicate.
2. Read the API contract: method, endpoint, parameters, schemas, authentication and errors.
3. Configure a safe development or staging environment and credentials.
4. Send/test normal, validation, authentication, retry and failure scenarios.
5. Document mismatches, edge cases, reliability expectations and the final integration behavior.

PM/TPM usage note: A Technical PM should be comfortable discussing and applying this with engineering; a general PM should understand the concept.

184. Headers

HTTP/API concept | TPM Core

WHAT IT IS / WHAT IT DOES	Carry metadata such as authorization, content type and idempotency keys.
WHEN TO USE IT	When requests need context outside the URL/body.
PRACTICAL EXAMPLE	Idempotency-Key prevents a duplicate payment create request.

Application guide

1. Start from the user/system use case and identify the systems that must communicate.

2. Read the API contract: method, endpoint, parameters, schemas, authentication and errors.
3. Configure a safe development or staging environment and credentials.
4. Send/test normal, validation, authentication, retry and failure scenarios.
5. Document mismatches, edge cases, reliability expectations and the final integration behavior.

PM/TPM usage note: A Technical PM should be comfortable discussing and applying this with engineering; a general PM should understand the concept.

185. API Key Authentication

Authentication method | TPM Core

WHAT IT IS / WHAT IT DOES	Authenticate a client using a secret key.
WHEN TO USE IT	For supported partner or server-to-server APIs.
PRACTICAL EXAMPLE	Backend uses a provider secret key to initiate a transaction.

Application guide

1. Identify the sensitive asset, threat, user role and business/regulatory requirement.
2. Define least-privilege access, authentication, encryption and data-handling controls.
3. Implement with engineering/security using approved platforms and secret management.
4. Test both allowed and denied behavior, including recovery and abuse cases.
5. Monitor, audit and review permissions or vulnerabilities over time.

PM/TPM usage note: A Technical PM should be comfortable discussing and applying this with engineering; a general PM should understand the concept.

186. Bearer Token

Authentication pattern | TPM Core

WHAT IT IS / WHAT IT DOES	Send an access token in the Authorization header.
WHEN TO USE IT	For token-protected APIs.
PRACTICAL EXAMPLE	Postman calls protected staging endpoints with a temporary token.

Application guide

1. Identify the sensitive asset, threat, user role and business/regulatory requirement.
2. Define least-privilege access, authentication, encryption and data-handling controls.
3. Implement with engineering/security using approved platforms and secret management.
4. Test both allowed and denied behavior, including recovery and abuse cases.
5. Monitor, audit and review permissions or vulnerabilities over time.

PM/TPM usage note: A Technical PM should be comfortable discussing and applying this with engineering; a general PM should understand the concept.

187. OAuth 2.0

Authorization framework | TPM Core

WHAT IT IS / WHAT IT DOES	Grant scoped delegated access without sharing user passwords.
WHEN TO USE IT	For third-party integrations and connected applications.

PRACTICAL EXAMPLE	Bookkeeping app gets read-only transaction permission from a merchant.

Application guide

1. Identify the sensitive asset, threat, user role and business/regulatory requirement.
2. Define least-privilege access, authentication, encryption and data-handling controls.
3. Implement with engineering/security using approved platforms and secret management.
4. Test both allowed and denied behavior, including recovery and abuse cases.
5. Monitor, audit and review permissions or vulnerabilities over time.

PM/TPM usage note: A Technical PM should be comfortable discussing and applying this with engineering; a general PM should understand the concept.

188. JWT

Token format | TPM Core

WHAT IT IS / WHAT IT DOES	Carry signed claims commonly used for identity and authorization.
WHEN TO USE IT	When systems exchange stateless access tokens.
PRACTICAL EXAMPLE	Backend verifies signed user ID, role, issuer and expiry claims.

Application guide

1. Identify the sensitive asset, threat, user role and business/regulatory requirement.
2. Define least-privilege access, authentication, encryption and data-handling controls.
3. Implement with engineering/security using approved platforms and secret management.
4. Test both allowed and denied behavior, including recovery and abuse cases.
5. Monitor, audit and review permissions or vulnerabilities over time.

PM/TPM usage note: A Technical PM should be comfortable discussing and applying this with engineering; a general PM should understand the concept.

189. HTTP Status Codes

API concept | TPM Core

WHAT IT IS / WHAT IT DOES	Communicate the high-level outcome of an HTTP request.
WHEN TO USE IT	When defining, testing or debugging API behavior.
PRACTICAL EXAMPLE	201 created, 400 invalid request, 401 unauthenticated, 429 rate limited, 500 server error.

Application guide

1. Start from the user/system use case and identify the systems that must communicate.
2. Read the API contract: method, endpoint, parameters, schemas, authentication and errors.
3. Configure a safe development or staging environment and credentials.
4. Send/test normal, validation, authentication, retry and failure scenarios.
5. Document mismatches, edge cases, reliability expectations and the final integration behavior.

PM/TPM usage note: A Technical PM should be comfortable discussing and applying this with engineering; a general PM should understand the concept.

190. Webhooks

Integration pattern | TPM Core

WHAT IT IS / WHAT IT DOES	Push asynchronous event notifications from one system to another.
WHEN TO USE IT	For payment, delivery, KYC and other status changes.
PRACTICAL EXAMPLE	Provider sends payment.success, backend verifies it and updates the order.

Application guide

1. Start from the user/system use case and identify the systems that must communicate.
2. Read the API contract: method, endpoint, parameters, schemas, authentication and errors.
3. Configure a safe development or staging environment and credentials.
4. Send/test normal, validation, authentication, retry and failure scenarios.
5. Document mismatches, edge cases, reliability expectations and the final integration behavior.

PM/TPM usage note: A Technical PM should be comfortable discussing and applying this with engineering; a general PM should understand the concept.

191. Idempotency

Reliability concept | TPM Core

WHAT IT IS / WHAT IT DOES	Prevent repeated write requests from causing duplicate effects.
WHEN TO USE IT	For payments, orders, retries and webhook processing.
PRACTICAL EXAMPLE	Two taps on Pay still create one charge.

Application guide

1. Start from the user/system use case and identify the systems that must communicate.
2. Read the API contract: method, endpoint, parameters, schemas, authentication and errors.
3. Configure a safe development or staging environment and credentials.
4. Send/test normal, validation, authentication, retry and failure scenarios.
5. Document mismatches, edge cases, reliability expectations and the final integration behavior.

PM/TPM usage note: A Technical PM should be comfortable discussing and applying this with engineering; a general PM should understand the concept.

192. Rate Limiting

Reliability/security concept | TPM Core

WHAT IT IS / WHAT IT DOES	Limit how frequently a client can call an API.
WHEN TO USE IT	To prevent abuse, overload and accidental request storms.
PRACTICAL EXAMPLE	Search allows 100 requests/minute and clients back off on 429.

Application guide

1. Start from the user/system use case and identify the systems that must communicate.
2. Read the API contract: method, endpoint, parameters, schemas, authentication and errors.
3. Configure a safe development or staging environment and credentials.
4. Send/test normal, validation, authentication, retry and failure scenarios.

5. Document mismatches, edge cases, reliability expectations and the final integration behavior.

PM/TPM usage note: A Technical PM should be comfortable discussing and applying this with engineering; a general PM should understand the concept.

193. Kong

API gateway | TPM Core

WHAT IT IS / WHAT IT DOES	Route, authenticate, rate-limit and manage API traffic.
WHEN TO USE IT	When an organization centralizes API policies in Kong.
PRACTICAL EXAMPLE	Kong validates tokens before requests reach the payments service.

Application guide

1. Start from the user/system use case and identify the systems that must communicate.
2. Read the API contract: method, endpoint, parameters, schemas, authentication and errors.
3. Configure a safe development or staging environment and credentials.
4. Send/test normal, validation, authentication, retry and failure scenarios.
5. Document mismatches, edge cases, reliability expectations and the final integration behavior.

PM/TPM usage note: A Technical PM should be comfortable discussing and applying this with engineering; a general PM should understand the concept.

194. AWS API Gateway

Managed API gateway | TPM Core

WHAT IT IS / WHAT IT DOES	Publish, secure and route APIs on AWS.
WHEN TO USE IT	When AWS hosts APIs requiring managed routing and throttling.
PRACTICAL EXAMPLE	Mobile app calls API Gateway which routes to backend services.

Application guide

1. Start from the user/system use case and identify the systems that must communicate.
2. Read the API contract: method, endpoint, parameters, schemas, authentication and errors.
3. Configure a safe development or staging environment and credentials.
4. Send/test normal, validation, authentication, retry and failure scenarios.
5. Document mismatches, edge cases, reliability expectations and the final integration behavior.

PM/TPM usage note: A Technical PM should be comfortable discussing and applying this with engineering; a general PM should understand the concept.

195. Azure API Management

Managed API gateway | TPM Core

WHAT IT IS / WHAT IT DOES	Publish and govern APIs with security, quotas, versions and portals.
WHEN TO USE IT	In Azure/Microsoft integration environments.
PRACTICAL EXAMPLE	Partner APIs use subscription keys, JWT policy and quota rules.

Application guide

1. Start from the user/system use case and identify the systems that must communicate.
2. Read the API contract: method, endpoint, parameters, schemas, authentication and errors.
3. Configure a safe development or staging environment and credentials.
4. Send/test normal, validation, authentication, retry and failure scenarios.
5. Document mismatches, edge cases, reliability expectations and the final integration behavior.

PM/TPM usage note: A Technical PM should be comfortable discussing and applying this with engineering; a general PM should understand the concept.

196. Google Apigee

API management platform | TPM Core

WHAT IT IS / WHAT IT DOES	Secure, analyze and expose APIs for internal or external consumers.
WHEN TO USE IT	For enterprise API programs with partner governance.
PRACTICAL EXAMPLE	Merchant APIs are exposed with client quotas and traffic analytics.

Application guide

1. Start from the user/system use case and identify the systems that must communicate.
2. Read the API contract: method, endpoint, parameters, schemas, authentication and errors.
3. Configure a safe development or staging environment and credentials.
4. Send/test normal, validation, authentication, retry and failure scenarios.
5. Document mismatches, edge cases, reliability expectations and the final integration behavior.

PM/TPM usage note: A Technical PM should be comfortable discussing and applying this with engineering; a general PM should understand the concept.

PART 17

Source Control, Engineering Workflow & Development Environments

TPMs do not need to become full-time developers, but should understand how code changes are reviewed, tested and moved toward release.

IN THIS PART	Git, GitHub, GitLab, Bitbucket, Repository, Branch, Commit, Pull Request / Merge Request, VS Code, IntelliJ IDEA, Android Studio, Xcode, Visual Studio

197. Git

Version control system | TPM Core

WHAT IT IS / WHAT IT DOES	Track code history and support branching and merging.
WHEN TO USE IT	Whenever engineering uses Git-based development.
PRACTICAL EXAMPLE	A bug fix is committed on a feature branch and merged after review.

Application guide

1. Identify the repository/service and the work item or product change being implemented.

2. Understand the branch, commit and review status without micromanaging code.
3. Check automated tests, reviews and security/build checks.
4. Confirm the change is merged into the correct release path and environment.
5. Use commit/PR/release references for traceability during QA or incidents.

PM/TPM usage note: A Technical PM should be comfortable discussing and applying this with engineering; a general PM should understand the concept.

198. GitHub

Source control/collaboration platform | TPM Core

WHAT IT IS / WHAT IT DOES	Host repositories, issues, pull requests, actions and releases.
WHEN TO USE IT	When engineering works in GitHub.
PRACTICAL EXAMPLE	Confirm the duplicate-payout fix PR passed checks and merged.

Application guide

1. Identify the repository/service and the work item or product change being implemented.
2. Understand the branch, commit and review status without micromanaging code.
3. Check automated tests, reviews and security/build checks.
4. Confirm the change is merged into the correct release path and environment.
5. Use commit/PR/release references for traceability during QA or incidents.

PM/TPM usage note: A Technical PM should be comfortable discussing and applying this with engineering; a general PM should understand the concept.

199. GitLab

DevOps/source control platform | TPM Core

WHAT IT IS / WHAT IT DOES	Host repositories, merge requests, CI/CD and project workflows.
WHEN TO USE IT	When the team uses GitLab end to end.
PRACTICAL EXAMPLE	A merge request is blocked because its security pipeline failed.

Application guide

1. Identify the repository/service and the work item or product change being implemented.
2. Understand the branch, commit and review status without micromanaging code.
3. Check automated tests, reviews and security/build checks.
4. Confirm the change is merged into the correct release path and environment.
5. Use commit/PR/release references for traceability during QA or incidents.

PM/TPM usage note: A Technical PM should be comfortable discussing and applying this with engineering; a general PM should understand the concept.

200. Bitbucket

Source control platform | TPM Core

WHAT IT IS / WHAT IT DOES	Host Git repositories and pull requests, often beside Jira.
WHEN TO USE IT	When engineering uses the Atlassian ecosystem.

PRACTICAL EXAMPLE	Jira story links to Bitbucket PR and build status.

Application guide

1. Identify the repository/service and the work item or product change being implemented.
2. Understand the branch, commit and review status without micromanaging code.
3. Check automated tests, reviews and security/build checks.
4. Confirm the change is merged into the correct release path and environment.
5. Use commit/PR/release references for traceability during QA or incidents.

PM/TPM usage note: A Technical PM should be comfortable discussing and applying this with engineering; a general PM should understand the concept.

201. Repository

Source-control concept | TPM Core

WHAT IT IS / WHAT IT DOES	A managed codebase and its version history.
WHEN TO USE IT	When identifying which codebase owns a feature or service.
PRACTICAL EXAMPLE	Mobile app and payment backend live in separate repositories.

Application guide

1. Identify the repository/service and the work item or product change being implemented.
2. Understand the branch, commit and review status without micromanaging code.
3. Check automated tests, reviews and security/build checks.
4. Confirm the change is merged into the correct release path and environment.
5. Use commit/PR/release references for traceability during QA or incidents.

PM/TPM usage note: A Technical PM should be comfortable discussing and applying this with engineering; a general PM should understand the concept.

202. Branch

Source-control concept | TPM Core

WHAT IT IS / WHAT IT DOES	An isolated line of code changes.
WHEN TO USE IT	To understand parallel feature work and release branching.
PRACTICAL EXAMPLE	feature/payment-retry contains changes before merge.

Application guide

1. Identify the repository/service and the work item or product change being implemented.
2. Understand the branch, commit and review status without micromanaging code.
3. Check automated tests, reviews and security/build checks.
4. Confirm the change is merged into the correct release path and environment.
5. Use commit/PR/release references for traceability during QA or incidents.

PM/TPM usage note: A Technical PM should be comfortable discussing and applying this with engineering; a general PM should understand the concept.

203. Commit

Source-control concept | TPM Core

WHAT IT IS / WHAT IT DOES	A recorded set of code changes with a unique history reference.
WHEN TO USE IT	For traceability between product work and implementation.
PRACTICAL EXAMPLE	Commit “Handle provider timeout” belongs to a larger PR.

Application guide

1. Identify the repository/service and the work item or product change being implemented.
2. Understand the branch, commit and review status without micromanaging code.
3. Check automated tests, reviews and security/build checks.
4. Confirm the change is merged into the correct release path and environment.
5. Use commit/PR/release references for traceability during QA or incidents.

PM/TPM usage note: A Technical PM should be comfortable discussing and applying this with engineering; a general PM should understand the concept.

204. Pull Request / Merge Request

Code review workflow | TPM Core

WHAT IT IS / WHAT IT DOES	Propose code changes for review, automated checks and merging.
WHEN TO USE IT	To know whether implementation is still under review, blocked or merged.
PRACTICAL EXAMPLE	PR is approved but a failing integration test still blocks release.

Application guide

1. Identify the repository/service and the work item or product change being implemented.
2. Understand the branch, commit and review status without micromanaging code.
3. Check automated tests, reviews and security/build checks.
4. Confirm the change is merged into the correct release path and environment.
5. Use commit/PR/release references for traceability during QA or incidents.

PM/TPM usage note: A Technical PM should be comfortable discussing and applying this with engineering; a general PM should understand the concept.

205. VS Code

Code editor | TPM Core

WHAT IT IS / WHAT IT DOES	Edit code, JSON, YAML, Markdown and configuration with developer tooling.
WHEN TO USE IT	For technical inspection and light scripting where appropriate.
PRACTICAL EXAMPLE	Review an OpenAPI YAML file with syntax highlighting.

Application guide

1. Identify the repository/service and the work item or product change being implemented.
2. Understand the branch, commit and review status without micromanaging code.
3. Check automated tests, reviews and security/build checks.
4. Confirm the change is merged into the correct release path and environment.
5. Use commit/PR/release references for traceability during QA or incidents.

PM/TPM usage note: A Technical PM should be comfortable discussing and applying this with engineering; a general PM should understand the concept.

206. IntelliJ IDEA

Integrated development environment | TPM Awareness

WHAT IT IS / WHAT IT DOES	Develop and debug JVM and other applications.
WHEN TO USE IT	When backend engineers use JetBrains IDEs.
PRACTICAL EXAMPLE	Java payment services are debugged in IntelliJ.

Application guide

1. Identify the repository/service and the work item or product change being implemented.
2. Understand the branch, commit and review status without micromanaging code.
3. Check automated tests, reviews and security/build checks.
4. Confirm the change is merged into the correct release path and environment.
5. Use commit/PR/release references for traceability during QA or incidents.

PM/TPM usage note: Understand its role and vocabulary; specialist operation is normally owned by engineering or security.

207. Android Studio

Android development environment | TPM Core

WHAT IT IS / WHAT IT DOES	Build, run and debug Android apps.
WHEN TO USE IT	When coordinating Android-specific delivery and QA.
PRACTICAL EXAMPLE	Reproduce a bug that occurs only on Android 14.

Application guide

1. Derive test scenarios from requirements, acceptance criteria, risk and past incidents.
2. Prepare the correct environment, test data, browser/device or API setup.
3. Execute happy path, validation, permissions, failure and recovery cases.
4. Log defects with reproducible steps, expected/actual behavior and evidence.
5. Retest fixes and use results as an explicit input to release readiness.

PM/TPM usage note: A Technical PM should be comfortable discussing and applying this with engineering; a general PM should understand the concept.

208. Xcode

Apple development environment | TPM Core

WHAT IT IS / WHAT IT DOES	Build, run and ship iOS/macOS apps.
WHEN TO USE IT	When coordinating iOS delivery and App Store releases.
PRACTICAL EXAMPLE	Release waits for a corrected iOS build and signing.

Application guide

1. Derive test scenarios from requirements, acceptance criteria, risk and past incidents.
2. Prepare the correct environment, test data, browser/device or API setup.
3. Execute happy path, validation, permissions, failure and recovery cases.
4. Log defects with reproducible steps, expected/actual behavior and evidence.
5. Retest fixes and use results as an explicit input to release readiness.

PM/TPM usage note: A Technical PM should be comfortable discussing and applying this with engineering; a general PM should understand the concept.

209. Visual Studio

Microsoft development environment | TPM Awareness

WHAT IT IS / WHAT IT DOES	Develop .NET and Microsoft-stack applications.
WHEN TO USE IT	In .NET/Azure teams.
PRACTICAL EXAMPLE	A .NET API is built in Visual Studio and released through Azure Pipelines.

Application guide

1. Identify the repository/service and the work item or product change being implemented.
2. Understand the branch, commit and review status without micromanaging code.
3. Check automated tests, reviews and security/build checks.
4. Confirm the change is merged into the correct release path and environment.
5. Use commit/PR/release references for traceability during QA or incidents.

PM/TPM usage note: Understand its role and vocabulary; specialist operation is normally owned by engineering or security.

PART 18

QA, Testing & Bug Management

Product owns expected behavior and release risk; QA and engineering provide specialized testing depth.

IN THIS PART	TestRail, Zephyr, BrowserStack, Cypress, Playwright, Selenium, Jest, JUnit, Bug Ticket, Severity, Priority

210. TestRail

Test management software | Both

WHAT IT IS / WHAT IT DOES	Organize test cases, plans, runs and release results.
WHEN TO USE IT	When formal regression and traceability are needed.
PRACTICAL EXAMPLE	Critical payment and refund tests must pass before launch.

Application guide

1. Derive test scenarios from requirements, acceptance criteria, risk and past incidents.
2. Prepare the correct environment, test data, browser/device or API setup.
3. Execute happy path, validation, permissions, failure and recovery cases.
4. Log defects with reproducible steps, expected/actual behavior and evidence.
5. Retest fixes and use results as an explicit input to release readiness.

PM/TPM usage note: Both PM and TPM roles benefit from this; the required technical depth depends on the product and team.

211. Zephyr

Jira test management | Both

WHAT IT IS / WHAT IT DOES	Manage test cases and executions connected to Jira work.
WHEN TO USE IT	When QA lives inside the Jira workflow.

PRACTICAL EXAMPLE	Story shows linked tests plus one blocking defect.

Application guide

1. Derive test scenarios from requirements, acceptance criteria, risk and past incidents.
2. Prepare the correct environment, test data, browser/device or API setup.
3. Execute happy path, validation, permissions, failure and recovery cases.
4. Log defects with reproducible steps, expected/actual behavior and evidence.
5. Retest fixes and use results as an explicit input to release readiness.

PM/TPM usage note: Both PM and TPM roles benefit from this; the required technical depth depends on the product and team.

212. BrowserStack

Cross-browser/device testing | Both

WHAT IT IS / WHAT IT DOES	Test web/mobile experiences across real browsers and devices.
WHEN TO USE IT	When compatibility across user environments matters.
PRACTICAL EXAMPLE	Validate checkout on common Android, iPhone, Safari and desktop browsers.

Application guide

1. Derive test scenarios from requirements, acceptance criteria, risk and past incidents.
2. Prepare the correct environment, test data, browser/device or API setup.
3. Execute happy path, validation, permissions, failure and recovery cases.
4. Log defects with reproducible steps, expected/actual behavior and evidence.
5. Retest fixes and use results as an explicit input to release readiness.

PM/TPM usage note: Both PM and TPM roles benefit from this; the required technical depth depends on the product and team.

213. Cypress

Web test automation framework | TPM Core

WHAT IT IS / WHAT IT DOES	Automate browser end-to-end and component tests.
WHEN TO USE IT	When engineering/QA automates web regression.
PRACTICAL EXAMPLE	Automate login → cart → checkout success.

Application guide

1. Derive test scenarios from requirements, acceptance criteria, risk and past incidents.
2. Prepare the correct environment, test data, browser/device or API setup.
3. Execute happy path, validation, permissions, failure and recovery cases.
4. Log defects with reproducible steps, expected/actual behavior and evidence.
5. Retest fixes and use results as an explicit input to release readiness.

PM/TPM usage note: A Technical PM should be comfortable discussing and applying this with engineering; a general PM should understand the concept.

214. Playwright

Web test automation framework | TPM Core

WHAT IT IS / WHAT IT DOES	Automate modern cross-browser testing and capture traces.

WHEN TO USE IT	For robust Chromium, Firefox and WebKit automation.
PRACTICAL EXAMPLE	Automate KYC happy path and validation errors.

Application guide

1. Derive test scenarios from requirements, acceptance criteria, risk and past incidents.
2. Prepare the correct environment, test data, browser/device or API setup.
3. Execute happy path, validation, permissions, failure and recovery cases.
4. Log defects with reproducible steps, expected/actual behavior and evidence.
5. Retest fixes and use results as an explicit input to release readiness.

PM/TPM usage note: A Technical PM should be comfortable discussing and applying this with engineering; a general PM should understand the concept.

215. Selenium

Browser automation framework | TPM Core

WHAT IT IS / WHAT IT DOES	Automate web browsers across languages and environments.
WHEN TO USE IT	In established automation stacks.
PRACTICAL EXAMPLE	Run nightly regression on account management.

Application guide

1. Derive test scenarios from requirements, acceptance criteria, risk and past incidents.
2. Prepare the correct environment, test data, browser/device or API setup.
3. Execute happy path, validation, permissions, failure and recovery cases.
4. Log defects with reproducible steps, expected/actual behavior and evidence.
5. Retest fixes and use results as an explicit input to release readiness.

PM/TPM usage note: A Technical PM should be comfortable discussing and applying this with engineering; a general PM should understand the concept.

216. Jest

JavaScript testing framework | TPM Awareness

WHAT IT IS / WHAT IT DOES	Run unit and integration tests for JavaScript/TypeScript.
WHEN TO USE IT	To understand automated checks around frontend/backend logic.
PRACTICAL EXAMPLE	Pricing-rule change fails an edge-case unit test.

Application guide

1. Derive test scenarios from requirements, acceptance criteria, risk and past incidents.
2. Prepare the correct environment, test data, browser/device or API setup.
3. Execute happy path, validation, permissions, failure and recovery cases.
4. Log defects with reproducible steps, expected/actual behavior and evidence.
5. Retest fixes and use results as an explicit input to release readiness.

PM/TPM usage note: Understand its role and vocabulary; specialist operation is normally owned by engineering or security.

217. JUnit

Java testing framework | TPM Awareness

WHAT IT IS / WHAT IT DOES	Run automated tests for JVM code.
WHEN TO USE IT	In Java backend/mobile environments.
PRACTICAL EXAMPLE	Payment-status service fails regression after a new enum.

Application guide

1. Derive test scenarios from requirements, acceptance criteria, risk and past incidents.
2. Prepare the correct environment, test data, browser/device or API setup.
3. Execute happy path, validation, permissions, failure and recovery cases.
4. Log defects with reproducible steps, expected/actual behavior and evidence.
5. Retest fixes and use results as an explicit input to release readiness.

PM/TPM usage note: Understand its role and vocabulary; specialist operation is normally owned by engineering or security.

218. Bug Ticket

Quality artifact | Both

WHAT IT IS / WHAT IT DOES	Describe a defect with enough detail to reproduce, prioritize and verify.
WHEN TO USE IT	Whenever actual behavior differs from expected behavior.
PRACTICAL EXAMPLE	Android 14: tapping Pay twice creates two pending transactions.

Application guide

1. Derive test scenarios from requirements, acceptance criteria, risk and past incidents.
2. Prepare the correct environment, test data, browser/device or API setup.
3. Execute happy path, validation, permissions, failure and recovery cases.
4. Log defects with reproducible steps, expected/actual behavior and evidence.
5. Retest fixes and use results as an explicit input to release readiness.

PM/TPM usage note: Both PM and TPM roles benefit from this; the required technical depth depends on the product and team.

219. Severity

Bug classification | Both

WHAT IT IS / WHAT IT DOES	Describe how badly a defect affects users or the system.
WHEN TO USE IT	To separate impact from delivery urgency.
PRACTICAL EXAMPLE	Duplicate charging is critical severity; minor spacing is low.

Application guide

1. Derive test scenarios from requirements, acceptance criteria, risk and past incidents.
2. Prepare the correct environment, test data, browser/device or API setup.
3. Execute happy path, validation, permissions, failure and recovery cases.
4. Log defects with reproducible steps, expected/actual behavior and evidence.
5. Retest fixes and use results as an explicit input to release readiness.

PM/TPM usage note: Both PM and TPM roles benefit from this; the required technical depth depends on the product and team.

220. Priority

Delivery decision | Both

WHAT IT IS / WHAT IT DOES	Describe how urgently a defect should be addressed.
WHEN TO USE IT	After considering severity, reach, workaround, risk and timing.
PRACTICAL EXAMPLE	Medium bug affecting mandatory new OS can become highest priority.

Application guide

1. List the candidate initiatives or requirements at the same level of detail.
2. Define the scoring categories and scales before scoring.
3. Score with evidence and involve engineering/design/data where their estimates matter.
4. Rank the work, then challenge the ranking for dependencies, risk and strategic commitments.
5. Record the result and revisit it when assumptions or evidence change.

PM/TPM usage note: Both PM and TPM roles benefit from this; the required technical depth depends on the product and team.

PART 19

CI/CD, Environments & Release Engineering

These concepts explain how software is built, validated and deployed repeatedly and safely.

IN THIS PART	CI (Continuous Integration), CD (Continuous Delivery/Deployment), GitHub Actions, GitLab CI/CD, Jenkins, CircleCI, Local Environment, Development Environment, QA / Test Environment, Staging Environment, Production Environment

221. CI (Continuous Integration)

Engineering practice | TPM Core

WHAT IT IS / WHAT IT DOES	Integrate code frequently and validate it automatically with builds and tests.
WHEN TO USE IT	To catch integration problems before release.
PRACTICAL EXAMPLE	A pull request cannot merge because integration tests fail.

Application guide

1. Identify the pipeline, artifact/version and target environment.
2. Follow the stages from build through automated tests and deployment gates.
3. Inspect failed stages with engineering rather than assuming the whole feature is broken.
4. Confirm approvals, migrations/configuration and deployment outcome.
5. Monitor the release in production and know the rollback or disable path.

PM/TPM usage note: A Technical PM should be comfortable discussing and applying this with engineering; a general PM should understand the concept.

222. CD (Continuous Delivery/Deployment)

Engineering practice | TPM Core

WHAT IT IS / WHAT IT DOES	Automate movement of validated changes toward or into production.
WHEN TO USE IT	For repeatable, safer software releases.

PRACTICAL EXAMPLE	Backend deploys to staging after merge and to production after approval.

Application guide

1. Identify the pipeline, artifact/version and target environment.
2. Follow the stages from build through automated tests and deployment gates.
3. Inspect failed stages with engineering rather than assuming the whole feature is broken.
4. Confirm approvals, migrations/configuration and deployment outcome.
5. Monitor the release in production and know the rollback or disable path.

PM/TPM usage note: A Technical PM should be comfortable discussing and applying this with engineering; a general PM should understand the concept.

223. GitHub Actions

CI/CD automation | TPM Core

WHAT IT IS / WHAT IT DOES	Automate builds, tests, checks and deployments in GitHub.
WHEN TO USE IT	When GitHub is the engineering platform.
PRACTICAL EXAMPLE	Production workflow fails because a required secret is missing.

Application guide

1. Identify the pipeline, artifact/version and target environment.
2. Follow the stages from build through automated tests and deployment gates.
3. Inspect failed stages with engineering rather than assuming the whole feature is broken.
4. Confirm approvals, migrations/configuration and deployment outcome.
5. Monitor the release in production and know the rollback or disable path.

PM/TPM usage note: A Technical PM should be comfortable discussing and applying this with engineering; a general PM should understand the concept.

224. GitLab CI/CD

CI/CD automation | TPM Core

WHAT IT IS / WHAT IT DOES	Build, test and deploy through GitLab pipelines.
WHEN TO USE IT	When GitLab runs delivery automation.
PRACTICAL EXAMPLE	Security scan prevents deployment.

Application guide

1. Identify the pipeline, artifact/version and target environment.
2. Follow the stages from build through automated tests and deployment gates.
3. Inspect failed stages with engineering rather than assuming the whole feature is broken.
4. Confirm approvals, migrations/configuration and deployment outcome.
5. Monitor the release in production and know the rollback or disable path.

PM/TPM usage note: A Technical PM should be comfortable discussing and applying this with engineering; a general PM should understand the concept.

225. Jenkins

Automation server | TPM Core

WHAT IT IS / WHAT IT DOES	Run customizable enterprise build, test and deployment pipelines.
WHEN TO USE IT	In many enterprise or legacy CI/CD stacks.
PRACTICAL EXAMPLE	Backend version deploys to staging then waits for approval.

Application guide

1. Identify the pipeline, artifact/version and target environment.
2. Follow the stages from build through automated tests and deployment gates.
3. Inspect failed stages with engineering rather than assuming the whole feature is broken.
4. Confirm approvals, migrations/configuration and deployment outcome.
5. Monitor the release in production and know the rollback or disable path.

PM/TPM usage note: A Technical PM should be comfortable discussing and applying this with engineering; a general PM should understand the concept.

226. CircleCI

CI/CD platform | TPM Core

WHAT IT IS / WHAT IT DOES	Automate software build and test workflows.
WHEN TO USE IT	When the engineering team uses CircleCI.
PRACTICAL EXAMPLE	Frontend build is blocked by failing end-to-end tests.

Application guide

1. Identify the pipeline, artifact/version and target environment.
2. Follow the stages from build through automated tests and deployment gates.
3. Inspect failed stages with engineering rather than assuming the whole feature is broken.
4. Confirm approvals, migrations/configuration and deployment outcome.
5. Monitor the release in production and know the rollback or disable path.

PM/TPM usage note: A Technical PM should be comfortable discussing and applying this with engineering; a general PM should understand the concept.

227. Local Environment

Environment concept | TPM Core

WHAT IT IS / WHAT IT DOES	Developer's own machine/runtime for coding and early tests.
WHEN TO USE IT	To distinguish local success from shared release readiness.
PRACTICAL EXAMPLE	Works locally but fails staging because auth configuration differs.

Application guide

1. Identify the pipeline, artifact/version and target environment.
2. Follow the stages from build through automated tests and deployment gates.
3. Inspect failed stages with engineering rather than assuming the whole feature is broken.
4. Confirm approvals, migrations/configuration and deployment outcome.
5. Monitor the release in production and know the rollback or disable path.

PM/TPM usage note: A Technical PM should be comfortable discussing and applying this with engineering; a general PM should understand the concept.

228. Development Environment

Environment concept | TPM Core

WHAT IT IS / WHAT IT DOES	Shared environment for active integration and development.
WHEN TO USE IT	For early shared testing before formal QA.
PRACTICAL EXAMPLE	Frontend and backend integrate the new search API in Dev.

Application guide

1. Identify the pipeline, artifact/version and target environment.
2. Follow the stages from build through automated tests and deployment gates.
3. Inspect failed stages with engineering rather than assuming the whole feature is broken.
4. Confirm approvals, migrations/configuration and deployment outcome.
5. Monitor the release in production and know the rollback or disable path.

PM/TPM usage note: A Technical PM should be comfortable discussing and applying this with engineering; a general PM should understand the concept.

229. QA / Test Environment

Environment concept | Both

WHAT IT IS / WHAT IT DOES	Environment dedicated to systematic testing.
WHEN TO USE IT	For feature, integration and regression testing.
PRACTICAL EXAMPLE	QA tests payment success, decline, timeout and duplicate cases.

Application guide

1. Derive test scenarios from requirements, acceptance criteria, risk and past incidents.
2. Prepare the correct environment, test data, browser/device or API setup.
3. Execute happy path, validation, permissions, failure and recovery cases.
4. Log defects with reproducible steps, expected/actual behavior and evidence.
5. Retest fixes and use results as an explicit input to release readiness.

PM/TPM usage note: Both PM and TPM roles benefit from this; the required technical depth depends on the product and team.

230. Staging Environment

Environment concept | Both

WHAT IT IS / WHAT IT DOES	Production-like environment for final end-to-end release validation.
WHEN TO USE IT	Before production release.
PRACTICAL EXAMPLE	Run full order → payment → fulfillment → notification flow.

Application guide

1. Identify the pipeline, artifact/version and target environment.
2. Follow the stages from build through automated tests and deployment gates.
3. Inspect failed stages with engineering rather than assuming the whole feature is broken.
4. Confirm approvals, migrations/configuration and deployment outcome.
5. Monitor the release in production and know the rollback or disable path.

PM/TPM usage note: Both PM and TPM roles benefit from this; the required technical depth depends on the product and team.

231. Production Environment

Environment concept | Both

WHAT IT IS / WHAT IT DOES	Live environment serving real users and data.
WHEN TO USE IT	Only through controlled release and operational processes.
PRACTICAL EXAMPLE	Monitor payment success and errors after checkout release.

Application guide

1. Identify the pipeline, artifact/version and target environment.
2. Follow the stages from build through automated tests and deployment gates.
3. Inspect failed stages with engineering rather than assuming the whole feature is broken.
4. Confirm approvals, migrations/configuration and deployment outcome.
5. Monitor the release in production and know the rollback or disable path.

PM/TPM usage note: Both PM and TPM roles benefit from this; the required technical depth depends on the product and team.

PART 20

Cloud, Infrastructure & Scalability

Technical PMs should know these building blocks well enough to discuss trade-offs, reliability and user impact.

IN THIS PART	AWS, Microsoft Azure, Google Cloud Platform (GCP), Compute, Database Service, Object Storage, CDN, Load Balancer, Serverless, Docker, Kubernetes

232. AWS

Cloud platform | TPM Core

WHAT IT IS / WHAT IT DOES	Provide compute, storage, databases, networking and managed services.
WHEN TO USE IT	When the product runs on Amazon Web Services.
PRACTICAL EXAMPLE	API compute, S3 files, CloudWatch telemetry and managed databases.

Application guide

1. Map the cloud service to the product capability it supports.
2. Understand regions/environments, data boundaries and major dependencies.
3. Translate product needs into availability, scale, latency, security and cost requirements.
4. Review failure modes and capacity assumptions with platform/engineering.
5. Monitor service health and revisit architecture when usage patterns change.

PM/TPM usage note: A Technical PM should be comfortable discussing and applying this with engineering; a general PM should understand the concept.

233. Microsoft Azure

Cloud platform | TPM Core

WHAT IT IS / WHAT IT DOES	Provide cloud infrastructure, data, identity, networking and managed services.
WHEN TO USE IT	In Microsoft/Azure organizations.

PRACTICAL EXAMPLE	B2B API uses Azure app hosting, database and Entra identity.

Application guide

1. Map the cloud service to the product capability it supports.
2. Understand regions/environments, data boundaries and major dependencies.
3. Translate product needs into availability, scale, latency, security and cost requirements.
4. Review failure modes and capacity assumptions with platform/engineering.
5. Monitor service health and revisit architecture when usage patterns change.

PM/TPM usage note: A Technical PM should be comfortable discussing and applying this with engineering; a general PM should understand the concept.

234. Google Cloud Platform (GCP)

Cloud platform | TPM Core

WHAT IT IS / WHAT IT DOES	Provide compute, data, storage and networking services.
WHEN TO USE IT	When the product runs on GCP.
PRACTICAL EXAMPLE	Data product uses BigQuery and managed application compute.

Application guide

1. Map the cloud service to the product capability it supports.
2. Understand regions/environments, data boundaries and major dependencies.
3. Translate product needs into availability, scale, latency, security and cost requirements.
4. Review failure modes and capacity assumptions with platform/engineering.
5. Monitor service health and revisit architecture when usage patterns change.

PM/TPM usage note: A Technical PM should be comfortable discussing and applying this with engineering; a general PM should understand the concept.

235. Compute

Infrastructure concept | TPM Core

WHAT IT IS / WHAT IT DOES	Processing resources that execute application code.
WHEN TO USE IT	When discussing performance, capacity and scaling.
PRACTICAL EXAMPLE	Traffic spike exhausts CPU and raises API latency.

Application guide

1. Map the cloud service to the product capability it supports.
2. Understand regions/environments, data boundaries and major dependencies.
3. Translate product needs into availability, scale, latency, security and cost requirements.
4. Review failure modes and capacity assumptions with platform/engineering.
5. Monitor service health and revisit architecture when usage patterns change.

PM/TPM usage note: A Technical PM should be comfortable discussing and applying this with engineering; a general PM should understand the concept.

236. Database Service

Infrastructure concept | TPM Core

WHAT IT IS / WHAT IT DOES	Managed storage and query systems for application data.

WHEN TO USE IT	When product reliability and data performance depend on persistence.
PRACTICAL EXAMPLE	Slow database queries increase checkout response times.

Application guide

1. Map the cloud service to the product capability it supports.
2. Understand regions/environments, data boundaries and major dependencies.
3. Translate product needs into availability, scale, latency, security and cost requirements.
4. Review failure modes and capacity assumptions with platform/engineering.
5. Monitor service health and revisit architecture when usage patterns change.

PM/TPM usage note: A Technical PM should be comfortable discussing and applying this with engineering; a general PM should understand the concept.

237. Object Storage

Infrastructure concept | TPM Core

WHAT IT IS / WHAT IT DOES	Store files and blobs such as images, documents and video.
WHEN TO USE IT	For media uploads and large non-relational files.
PRACTICAL EXAMPLE	Marketplace product images live in object storage.

Application guide

1. Map the cloud service to the product capability it supports.
2. Understand regions/environments, data boundaries and major dependencies.
3. Translate product needs into availability, scale, latency, security and cost requirements.
4. Review failure modes and capacity assumptions with platform/engineering.
5. Monitor service health and revisit architecture when usage patterns change.

PM/TPM usage note: A Technical PM should be comfortable discussing and applying this with engineering; a general PM should understand the concept.

238. CDN

Infrastructure concept | TPM Core

WHAT IT IS / WHAT IT DOES	Cache and deliver content closer to users.
WHEN TO USE IT	For faster static assets and media at distributed locations.
PRACTICAL EXAMPLE	Product images load from nearby edge locations.

Application guide

1. Map the cloud service to the product capability it supports.
2. Understand regions/environments, data boundaries and major dependencies.
3. Translate product needs into availability, scale, latency, security and cost requirements.
4. Review failure modes and capacity assumptions with platform/engineering.
5. Monitor service health and revisit architecture when usage patterns change.

PM/TPM usage note: A Technical PM should be comfortable discussing and applying this with engineering; a general PM should understand the concept.

239. Load Balancer

Infrastructure concept | TPM Core

WHAT IT IS / WHAT IT DOES	Distribute traffic across healthy service instances.
WHEN TO USE IT	For availability and scale.
PRACTICAL EXAMPLE	Checkout traffic is spread across multiple API instances.

Application guide

1. Map the cloud service to the product capability it supports.
2. Understand regions/environments, data boundaries and major dependencies.
3. Translate product needs into availability, scale, latency, security and cost requirements.
4. Review failure modes and capacity assumptions with platform/engineering.
5. Monitor service health and revisit architecture when usage patterns change.

PM/TPM usage note: A Technical PM should be comfortable discussing and applying this with engineering; a general PM should understand the concept.

240. Serverless

Cloud architecture concept | TPM Core

WHAT IT IS / WHAT IT DOES	Run event-driven functions/services without managing servers directly.
WHEN TO USE IT	For variable or event-driven workloads.
PRACTICAL EXAMPLE	Image metadata processing runs after each upload event.

Application guide

1. Map the cloud service to the product capability it supports.
2. Understand regions/environments, data boundaries and major dependencies.
3. Translate product needs into availability, scale, latency, security and cost requirements.
4. Review failure modes and capacity assumptions with platform/engineering.
5. Monitor service health and revisit architecture when usage patterns change.

PM/TPM usage note: A Technical PM should be comfortable discussing and applying this with engineering; a general PM should understand the concept.

241. Docker

Containerization platform | TPM Core

WHAT IT IS / WHAT IT DOES	Package applications and dependencies into consistent container images.
WHEN TO USE IT	To make deployment units repeatable across environments.
PRACTICAL EXAMPLE	The same backend image moves from staging to production.

Application guide

1. Map the cloud service to the product capability it supports.
2. Understand regions/environments, data boundaries and major dependencies.
3. Translate product needs into availability, scale, latency, security and cost requirements.
4. Review failure modes and capacity assumptions with platform/engineering.
5. Monitor service health and revisit architecture when usage patterns change.

PM/TPM usage note: A Technical PM should be comfortable discussing and applying this with engineering; a general PM should understand the concept.

242. Kubernetes

Container orchestration platform | TPM Core

WHAT IT IS / WHAT IT DOES	Deploy, scale and recover containerized services.
WHEN TO USE IT	In larger cloud-native systems.
PRACTICAL EXAMPLE	Service scales from four to twelve replicas during peak traffic.

Application guide

1. Map the cloud service to the product capability it supports.
2. Understand regions/environments, data boundaries and major dependencies.
3. Translate product needs into availability, scale, latency, security and cost requirements.
4. Review failure modes and capacity assumptions with platform/engineering.
5. Monitor service health and revisit architecture when usage patterns change.

PM/TPM usage note: A Technical PM should be comfortable discussing and applying this with engineering; a general PM should understand the concept.

PART 21

Monitoring, Observability & Performance

These tools help teams understand production health, diagnose failures and connect technical problems to user impact.

IN THIS PART	Datadog, Sentry, New Relic, Grafana, Prometheus, Splunk, ELK Stack, CloudWatch, Firebase Performance Monitoring, Logging, Latency

243. Datadog

Observability platform | TPM Core

WHAT IT IS / WHAT IT DOES	Monitor metrics, logs, traces, infrastructure and application performance.
WHEN TO USE IT	For production health and incident diagnosis.
PRACTICAL EXAMPLE	Payment success falls while traces show provider timeouts in one release.

Application guide

1. Select the correct service, environment, release and time window.
2. Check the core signals: traffic, errors, latency and resource saturation.
3. Use logs and traces to follow representative failed or slow requests.
4. Quantify affected users/business impact, not only technical symptoms.
5. Verify that metrics recover after the fix, rollback or configuration change.

PM/TPM usage note: A Technical PM should be comfortable discussing and applying this with engineering; a general PM should understand the concept.

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244. Sentry

Application error monitoring | Both

WHAT IT IS / WHAT IT DOES	Capture crashes, exceptions and performance issues with release context.

WHEN TO USE IT	When users experience application errors or crashes.
PRACTICAL EXAMPLE	iOS checkout crash is traced to a null value in the latest version.

Application guide

1. Select the correct service, environment, release and time window.
2. Check the core signals: traffic, errors, latency and resource saturation.
3. Use logs and traces to follow representative failed or slow requests.
4. Quantify affected users/business impact, not only technical symptoms.
5. Verify that metrics recover after the fix, rollback or configuration change.

PM/TPM usage note: Both PM and TPM roles benefit from this; the required technical depth depends on the product and team.

245. New Relic

Observability/APM platform | TPM Core

WHAT IT IS / WHAT IT DOES	Monitor applications, infrastructure, logs and performance.
WHEN TO USE IT	For service troubleshooting and performance analysis.
PRACTICAL EXAMPLE	API latency doubles after a release because of a slow database call.

Application guide

1. Select the correct service, environment, release and time window.
2. Check the core signals: traffic, errors, latency and resource saturation.
3. Use logs and traces to follow representative failed or slow requests.
4. Quantify affected users/business impact, not only technical symptoms.
5. Verify that metrics recover after the fix, rollback or configuration change.

PM/TPM usage note: A Technical PM should be comfortable discussing and applying this with engineering; a general PM should understand the concept.

246. Grafana

Observability visualization | TPM Core

WHAT IT IS / WHAT IT DOES	Create dashboards over metrics and logs from multiple sources.
WHEN TO USE IT	When engineering exposes service-health dashboards.
PRACTICAL EXAMPLE	Queue backlog rises before notification delays become visible.

Application guide

1. Select the correct service, environment, release and time window.
2. Check the core signals: traffic, errors, latency and resource saturation.
3. Use logs and traces to follow representative failed or slow requests.
4. Quantify affected users/business impact, not only technical symptoms.
5. Verify that metrics recover after the fix, rollback or configuration change.

PM/TPM usage note: A Technical PM should be comfortable discussing and applying this with engineering; a general PM should understand the concept.

247. Prometheus

Metrics monitoring system | TPM Awareness

WHAT IT IS / WHAT IT DOES	Collect and query time-series service metrics.
WHEN TO USE IT	In cloud-native monitoring stacks, commonly with Grafana.
PRACTICAL EXAMPLE	Monitor payment API request rate, latency and errors.

Application guide

1. Select the correct service, environment, release and time window.
2. Check the core signals: traffic, errors, latency and resource saturation.
3. Use logs and traces to follow representative failed or slow requests.
4. Quantify affected users/business impact, not only technical symptoms.
5. Verify that metrics recover after the fix, rollback or configuration change.

PM/TPM usage note: Understand its role and vocabulary; specialist operation is normally owned by engineering or security.

248. Splunk

Log/security analytics | TPM Core

WHAT IT IS / WHAT IT DOES	Search and analyze large volumes of machine logs and events.
WHEN TO USE IT	For incident investigation, audit and operational analysis.
PRACTICAL EXAMPLE	Trace a failed order across services using a correlation ID.

Application guide

1. Select the correct service, environment, release and time window.
2. Check the core signals: traffic, errors, latency and resource saturation.
3. Use logs and traces to follow representative failed or slow requests.
4. Quantify affected users/business impact, not only technical symptoms.
5. Verify that metrics recover after the fix, rollback or configuration change.

PM/TPM usage note: A Technical PM should be comfortable discussing and applying this with engineering; a general PM should understand the concept.

249. ELK Stack

Logging/search stack | TPM Core

WHAT IT IS / WHAT IT DOES	Use Elasticsearch, Logstash and Kibana to ingest, search and visualize logs.
WHEN TO USE IT	When the organization operates centralized ELK logging.
PRACTICAL EXAMPLE	Search provider_timeout logs after failed payments spike.

Application guide

1. Select the correct service, environment, release and time window.
2. Check the core signals: traffic, errors, latency and resource saturation.
3. Use logs and traces to follow representative failed or slow requests.
4. Quantify affected users/business impact, not only technical symptoms.
5. Verify that metrics recover after the fix, rollback or configuration change.

PM/TPM usage note: A Technical PM should be comfortable discussing and applying this with engineering; a general PM should understand the concept.

250. CloudWatch

AWS monitoring service | TPM Core

WHAT IT IS / WHAT IT DOES	Monitor AWS metrics, logs and alarms.
WHEN TO USE IT	When workloads run on AWS.
PRACTICAL EXAMPLE	A serverless error-rate alarm fires after release.

Application guide

1. Select the correct service, environment, release and time window.
2. Check the core signals: traffic, errors, latency and resource saturation.
3. Use logs and traces to follow representative failed or slow requests.
4. Quantify affected users/business impact, not only technical symptoms.
5. Verify that metrics recover after the fix, rollback or configuration change.

PM/TPM usage note: A Technical PM should be comfortable discussing and applying this with engineering; a general PM should understand the concept.

251. Firebase Performance Monitoring

Mobile/web performance tool | TPM Core

WHAT IT IS / WHAT IT DOES	Measure app startup, network requests and performance traces in Firebase apps.
WHEN TO USE IT	When mobile/web performance needs user-facing telemetry.
PRACTICAL EXAMPLE	Identify slow API calls experienced by Android users.

Application guide

1. Select the correct service, environment, release and time window.
2. Check the core signals: traffic, errors, latency and resource saturation.
3. Use logs and traces to follow representative failed or slow requests.
4. Quantify affected users/business impact, not only technical symptoms.
5. Verify that metrics recover after the fix, rollback or configuration change.

PM/TPM usage note: A Technical PM should be comfortable discussing and applying this with engineering; a general PM should understand the concept.

252. Logging

Observability practice | TPM Core

WHAT IT IS / WHAT IT DOES	Record structured system events for troubleshooting and audit.
WHEN TO USE IT	For all critical product workflows.
PRACTICAL EXAMPLE	Payment request → timeout → retry → failure uses one correlation ID.

Application guide

1. Select the correct service, environment, release and time window.
2. Check the core signals: traffic, errors, latency and resource saturation.
3. Use logs and traces to follow representative failed or slow requests.
4. Quantify affected users/business impact, not only technical symptoms.

5. Verify that metrics recover after the fix, rollback or configuration change.

PM/TPM usage note: A Technical PM should be comfortable discussing and applying this with engineering; a general PM should understand the concept.

253. Latency

Performance metric | TPM Core

WHAT IT IS / WHAT IT DOES	Measure time required for a request or operation.
WHEN TO USE IT	For APIs, pages, search and transactions.
PRACTICAL EXAMPLE	95th percentile checkout latency rises from 450 ms to 1.8 s.

Application guide

1. Start with the product question, metric definition and expected user behavior.
2. Verify the event/data instrumentation before interpreting charts.
3. Build the relevant funnel, cohort, segment or dashboard.
4. Compare meaningful segments and time periods; check for data-quality traps.
5. Turn the finding into an action, experiment or follow-up research question.

PM/TPM usage note: A Technical PM should be comfortable discussing and applying this with engineering; a general PM should understand the concept.

PART 22

Feature Flags & Experimentation

Feature management separates deployment from exposure and makes safer rollout and controlled tests possible.

IN THIS PART	LaunchDarkly, Unleash, Split, Flagsmith, ConfigCat, Optimizely, VWO, Amplitude Experiment

254. LaunchDarkly

Feature management platform | TPM Core

WHAT IT IS / WHAT IT DOES	Control feature flags, targeting and gradual rollout.
WHEN TO USE IT	When a feature should be enabled selectively without redeploying.
PRACTICAL EXAMPLE	New checkout moves from staff to 5%, 25%, 50% and 100%.

Application guide

1. State whether the goal is safe rollout, targeted beta or a controlled experiment.
2. Create the flag and define environments, audiences and default behavior.
3. Start with internal or small cohorts and set technical/business guardrails.
4. Increase exposure only while health and outcome metrics remain acceptable.
5. Remove stale flags after full rollout so they do not become permanent complexity.

PM/TPM usage note: A Technical PM should be comfortable discussing and applying this with engineering; a general PM should understand the concept.

255. Unleash

Feature flag platform | TPM Core

WHAT IT IS / WHAT IT DOES	Manage feature flags and gradual rollout, including self-hosted options.
WHEN TO USE IT	When teams want controlled feature exposure.
PRACTICAL EXAMPLE	Enable a new search algorithm only for beta customers.

Application guide

1. State whether the goal is safe rollout, targeted beta or a controlled experiment.
2. Create the flag and define environments, audiences and default behavior.
3. Start with internal or small cohorts and set technical/business guardrails.
4. Increase exposure only while health and outcome metrics remain acceptable.
5. Remove stale flags after full rollout so they do not become permanent complexity.

PM/TPM usage note: A Technical PM should be comfortable discussing and applying this with engineering; a general PM should understand the concept.

256. Split

Feature delivery/experimentation | Both

WHAT IT IS / WHAT IT DOES	Combine feature flags with outcome measurement.
WHEN TO USE IT	When release control and experimentation should be connected.
PRACTICAL EXAMPLE	Test a pricing page while tracking signup and support impact.

Application guide

1. State whether the goal is safe rollout, targeted beta or a controlled experiment.
2. Create the flag and define environments, audiences and default behavior.
3. Start with internal or small cohorts and set technical/business guardrails.
4. Increase exposure only while health and outcome metrics remain acceptable.
5. Remove stale flags after full rollout so they do not become permanent complexity.

PM/TPM usage note: Both PM and TPM roles benefit from this; the required technical depth depends on the product and team.

257. Flagsmith

Feature flag platform | TPM Core

WHAT IT IS / WHAT IT DOES	Control feature availability and remote configuration by segment/environment.
WHEN TO USE IT	For gradual rollout and environment-specific features.
PRACTICAL EXAMPLE	Enable a dashboard only for enterprise beta accounts.

Application guide

1. State whether the goal is safe rollout, targeted beta or a controlled experiment.
2. Create the flag and define environments, audiences and default behavior.
3. Start with internal or small cohorts and set technical/business guardrails.
4. Increase exposure only while health and outcome metrics remain acceptable.
5. Remove stale flags after full rollout so they do not become permanent complexity.

PM/TPM usage note: A Technical PM should be comfortable discussing and applying this with engineering; a general PM should understand the concept.

258. ConfigCat

Feature flag service | TPM Core

WHAT IT IS / WHAT IT DOES	Manage hosted feature toggles and targeting rules.
WHEN TO USE IT	For simpler feature flag needs.
PRACTICAL EXAMPLE	Disable a problematic feature without waiting for a new build.

Application guide

1. State whether the goal is safe rollout, targeted beta or a controlled experiment.
2. Create the flag and define environments, audiences and default behavior.
3. Start with internal or small cohorts and set technical/business guardrails.
4. Increase exposure only while health and outcome metrics remain acceptable.
5. Remove stale flags after full rollout so they do not become permanent complexity.

PM/TPM usage note: A Technical PM should be comfortable discussing and applying this with engineering; a general PM should understand the concept.

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259. Optimizely

Experimentation platform | PM Core

WHAT IT IS / WHAT IT DOES	Run A/B experiments and personalization.
WHEN TO USE IT	For high-impact conversion, UX or pricing tests.
PRACTICAL EXAMPLE	Compare Pay Now vs Complete Payment using checkout completion.

Application guide

1. State whether the goal is safe rollout, targeted beta or a controlled experiment.
2. Create the flag and define environments, audiences and default behavior.
3. Start with internal or small cohorts and set technical/business guardrails.
4. Increase exposure only while health and outcome metrics remain acceptable.
5. Remove stale flags after full rollout so they do not become permanent complexity.

PM/TPM usage note: You should be able to lead or independently use this in normal product work.

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260. VWO

Experimentation/CRO platform | PM Core

WHAT IT IS / WHAT IT DOES	Run web conversion experiments.
WHEN TO USE IT	For landing pages and web funnel optimization.
PRACTICAL EXAMPLE	Test a shorter registration form.

Application guide

1. State whether the goal is safe rollout, targeted beta or a controlled experiment.
2. Create the flag and define environments, audiences and default behavior.
3. Start with internal or small cohorts and set technical/business guardrails.
4. Increase exposure only while health and outcome metrics remain acceptable.
5. Remove stale flags after full rollout so they do not become permanent complexity.

PM/TPM usage note: You should be able to lead or independently use this in normal product work.

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261. Amplitude Experiment

Experimentation platform | Both

WHAT IT IS / WHAT IT DOES	Run experiments connected to product analytics.
WHEN TO USE IT	When Amplitude is already the measurement stack.
PRACTICAL EXAMPLE	Test a seller onboarding checklist and measure activation.

Application guide

1. State whether the goal is safe rollout, targeted beta or a controlled experiment.
2. Create the flag and define environments, audiences and default behavior.
3. Start with internal or small cohorts and set technical/business guardrails.
4. Increase exposure only while health and outcome metrics remain acceptable.
5. Remove stale flags after full rollout so they do not become permanent complexity.

PM/TPM usage note: Both PM and TPM roles benefit from this; the required technical depth depends on the product and team.

PART 23

Security, Authentication & Access

Product and Technical PMs should translate security risks into product requirements while specialists handle deep implementation and testing.

IN THIS PART	Snyk, SonarQube, OWASP ZAP, Burp Suite, GitHub Security Scanning, Encryption, HTTPS / TLS, Authentication, Authorization, RBAC, PII, Secrets Management, Auth0, Okta, Firebase Authentication, Amazon Cognito, Microsoft Entra ID

262. Snyk

Developer security platform | TPM Core

WHAT IT IS / WHAT IT DOES	Scan code, dependencies, containers and infrastructure definitions for vulnerabilities.
WHEN TO USE IT	When security checks are part of delivery and release readiness.
PRACTICAL EXAMPLE	A critical dependency vulnerability blocks release until upgraded.

Application guide

1. Identify the sensitive asset, threat, user role and business/regulatory requirement.
2. Define least-privilege access, authentication, encryption and data-handling controls.
3. Implement with engineering/security using approved platforms and secret management.
4. Test both allowed and denied behavior, including recovery and abuse cases.
5. Monitor, audit and review permissions or vulnerabilities over time.

PM/TPM usage note: A Technical PM should be comfortable discussing and applying this with engineering; a general PM should understand the concept.

263. SonarQube

Code quality/security analysis | TPM Core

WHAT IT IS / WHAT IT DOES	Analyze code for defects, vulnerabilities and maintainability issues.
WHEN TO USE IT	When quality gates are built into CI.
PRACTICAL EXAMPLE	An authentication security hotspot requires review before merge.

Application guide

1. Identify the sensitive asset, threat, user role and business/regulatory requirement.
2. Define least-privilege access, authentication, encryption and data-handling controls.
3. Implement with engineering/security using approved platforms and secret management.
4. Test both allowed and denied behavior, including recovery and abuse cases.
5. Monitor, audit and review permissions or vulnerabilities over time.

PM/TPM usage note: A Technical PM should be comfortable discussing and applying this with engineering; a general PM should understand the concept.

264. OWASP ZAP

Web security testing tool | TPM Awareness

WHAT IT IS / WHAT IT DOES	Scan authorized web apps and APIs for common vulnerabilities.
WHEN TO USE IT	During structured security testing in safe environments.
PRACTICAL EXAMPLE	Scan staging for insecure headers and input-validation issues.

Application guide

1. Identify the sensitive asset, threat, user role and business/regulatory requirement.
2. Define least-privilege access, authentication, encryption and data-handling controls.
3. Implement with engineering/security using approved platforms and secret management.
4. Test both allowed and denied behavior, including recovery and abuse cases.
5. Monitor, audit and review permissions or vulnerabilities over time.

PM/TPM usage note: Understand its role and vocabulary; specialist operation is normally owned by engineering or security.

265. Burp Suite

Web security testing platform | TPM Awareness

WHAT IT IS / WHAT IT DOES	Inspect and test HTTP traffic for security weaknesses.
WHEN TO USE IT	For authorized professional web security testing.
PRACTICAL EXAMPLE	Validate that one user cannot access another user’s order.

Application guide

1. Identify the sensitive asset, threat, user role and business/regulatory requirement.
2. Define least-privilege access, authentication, encryption and data-handling controls.
3. Implement with engineering/security using approved platforms and secret management.
4. Test both allowed and denied behavior, including recovery and abuse cases.
5. Monitor, audit and review permissions or vulnerabilities over time.

PM/TPM usage note: Understand its role and vocabulary; specialist operation is normally owned by engineering or security.

266. GitHub Security Scanning

Repository security tooling | TPM Core

WHAT IT IS / WHAT IT DOES	Detect vulnerable dependencies, secrets and code issues in GitHub.
WHEN TO USE IT	When GitHub hosts code and automated security checks are used.
PRACTICAL EXAMPLE	A committed secret is detected and rotated immediately.

Application guide

1. Identify the sensitive asset, threat, user role and business/regulatory requirement.
2. Define least-privilege access, authentication, encryption and data-handling controls.
3. Implement with engineering/security using approved platforms and secret management.
4. Test both allowed and denied behavior, including recovery and abuse cases.
5. Monitor, audit and review permissions or vulnerabilities over time.

PM/TPM usage note: A Technical PM should be comfortable discussing and applying this with engineering; a general PM should understand the concept.

267. Encryption

Security concept | Both

WHAT IT IS / WHAT IT DOES	Protect data so unauthorized parties cannot read it.
WHEN TO USE IT	For sensitive customer, business and transaction data.
PRACTICAL EXAMPLE	Identity documents are encrypted in storage and transit.

Application guide

1. Identify the sensitive asset, threat, user role and business/regulatory requirement.
2. Define least-privilege access, authentication, encryption and data-handling controls.
3. Implement with engineering/security using approved platforms and secret management.
4. Test both allowed and denied behavior, including recovery and abuse cases.
5. Monitor, audit and review permissions or vulnerabilities over time.

PM/TPM usage note: Both PM and TPM roles benefit from this; the required technical depth depends on the product and team.

268. HTTPS / TLS

Transport security | TPM Core

WHAT IT IS / WHAT IT DOES	Encrypt traffic between clients and servers.
WHEN TO USE IT	For production web and API communication.
PRACTICAL EXAMPLE	Mobile app calls secure HTTPS endpoints only.

Application guide

1. Identify the sensitive asset, threat, user role and business/regulatory requirement.
2. Define least-privilege access, authentication, encryption and data-handling controls.
3. Implement with engineering/security using approved platforms and secret management.
4. Test both allowed and denied behavior, including recovery and abuse cases.
5. Monitor, audit and review permissions or vulnerabilities over time.

PM/TPM usage note: A Technical PM should be comfortable discussing and applying this with engineering; a general PM should understand the concept.

269. Authentication

Security concept | Both

WHAT IT IS / WHAT IT DOES	Verify who a user or system is.
WHEN TO USE IT	Before granting access to protected accounts and services.
PRACTICAL EXAMPLE	Password plus OTP verifies a user before session creation.

Application guide

1. Identify the sensitive asset, threat, user role and business/regulatory requirement.
2. Define least-privilege access, authentication, encryption and data-handling controls.
3. Implement with engineering/security using approved platforms and secret management.
4. Test both allowed and denied behavior, including recovery and abuse cases.
5. Monitor, audit and review permissions or vulnerabilities over time.

PM/TPM usage note: Both PM and TPM roles benefit from this; the required technical depth depends on the product and team.

270. Authorization

Security concept | Both

WHAT IT IS / WHAT IT DOES	Determine what an authenticated identity is allowed to do.
WHEN TO USE IT	For permissions, roles and resource access.
PRACTICAL EXAMPLE	Vendor can edit their store but not another vendor's settlement data.

Application guide

1. Identify the sensitive asset, threat, user role and business/regulatory requirement.
2. Define least-privilege access, authentication, encryption and data-handling controls.
3. Implement with engineering/security using approved platforms and secret management.
4. Test both allowed and denied behavior, including recovery and abuse cases.
5. Monitor, audit and review permissions or vulnerabilities over time.

PM/TPM usage note: Both PM and TPM roles benefit from this; the required technical depth depends on the product and team.

271. RBAC

Access-control model | Both

WHAT IT IS / WHAT IT DOES	Grant permissions according to defined roles.
WHEN TO USE IT	For admin, B2B and internal tools with different responsibilities.
PRACTICAL EXAMPLE	Support can view orders; Finance can refund; Super Admin manages roles.

Application guide

1. Identify the sensitive asset, threat, user role and business/regulatory requirement.
2. Define least-privilege access, authentication, encryption and data-handling controls.
3. Implement with engineering/security using approved platforms and secret management.
4. Test both allowed and denied behavior, including recovery and abuse cases.
5. Monitor, audit and review permissions or vulnerabilities over time.

PM/TPM usage note: Both PM and TPM roles benefit from this; the required technical depth depends on the product and team.

272. PII

Privacy concept | Both

WHAT IT IS / WHAT IT DOES	Identify data that can relate to or identify a person.
WHEN TO USE IT	When designing collection, analytics, logs and support workflows.
PRACTICAL EXAMPLE	Do not send full national ID numbers to analytics.

Application guide

1. Identify the sensitive asset, threat, user role and business/regulatory requirement.
2. Define least-privilege access, authentication, encryption and data-handling controls.
3. Implement with engineering/security using approved platforms and secret management.
4. Test both allowed and denied behavior, including recovery and abuse cases.
5. Monitor, audit and review permissions or vulnerabilities over time.

PM/TPM usage note: Both PM and TPM roles benefit from this; the required technical depth depends on the product and team.

273. Secrets Management

Security practice | TPM Core

WHAT IT IS / WHAT IT DOES	Store API keys, passwords and cryptographic secrets safely.
WHEN TO USE IT	For every production integration and service.
PRACTICAL EXAMPLE	Provider secret key is stored server-side and separated by environment.

Application guide

1. Identify the sensitive asset, threat, user role and business/regulatory requirement.
2. Define least-privilege access, authentication, encryption and data-handling controls.
3. Implement with engineering/security using approved platforms and secret management.
4. Test both allowed and denied behavior, including recovery and abuse cases.
5. Monitor, audit and review permissions or vulnerabilities over time.

PM/TPM usage note: A Technical PM should be comfortable discussing and applying this with engineering; a general PM should understand the concept.

274. Auth0

Identity platform | TPM Core

WHAT IT IS / WHAT IT DOES	Provide authentication, authorization and identity flows.
WHEN TO USE IT	When a product uses managed identity rather than building everything.
PRACTICAL EXAMPLE	Support email/password, Google login and MFA.

Application guide

1. Identify the sensitive asset, threat, user role and business/regulatory requirement.
2. Define least-privilege access, authentication, encryption and data-handling controls.
3. Implement with engineering/security using approved platforms and secret management.
4. Test both allowed and denied behavior, including recovery and abuse cases.
5. Monitor, audit and review permissions or vulnerabilities over time.

PM/TPM usage note: A Technical PM should be comfortable discussing and applying this with engineering; a general PM should understand the concept.

275. Okta

Identity/access platform | TPM Core

WHAT IT IS / WHAT IT DOES	Provide SSO, MFA and enterprise access management.
WHEN TO USE IT	For B2B and workforce identity.
PRACTICAL EXAMPLE	Enterprise customers sign in using corporate SSO.

Application guide

1. Identify the sensitive asset, threat, user role and business/regulatory requirement.
2. Define least-privilege access, authentication, encryption and data-handling controls.
3. Implement with engineering/security using approved platforms and secret management.
4. Test both allowed and denied behavior, including recovery and abuse cases.
5. Monitor, audit and review permissions or vulnerabilities over time.

PM/TPM usage note: A Technical PM should be comfortable discussing and applying this with engineering; a general PM should understand the concept.

276. Firebase Authentication

Managed authentication | TPM Core

WHAT IT IS / WHAT IT DOES	Provide common login methods for web and mobile apps.
WHEN TO USE IT	In Firebase-based products and rapid mobile development.
PRACTICAL EXAMPLE	Support phone OTP and Google login.

Application guide

1. Identify the sensitive asset, threat, user role and business/regulatory requirement.
2. Define least-privilege access, authentication, encryption and data-handling controls.
3. Implement with engineering/security using approved platforms and secret management.
4. Test both allowed and denied behavior, including recovery and abuse cases.
5. Monitor, audit and review permissions or vulnerabilities over time.

PM/TPM usage note: A Technical PM should be comfortable discussing and applying this with engineering; a general PM should understand the concept.

277. Amazon Cognito

AWS identity service | TPM Core

WHAT IT IS / WHAT IT DOES	Manage application users, tokens, groups and MFA.
WHEN TO USE IT	When AWS-native identity management fits the stack.
PRACTICAL EXAMPLE	Consumer app uses Cognito for signup, MFA and JWTs.

Application guide

1. Identify the sensitive asset, threat, user role and business/regulatory requirement.
2. Define least-privilege access, authentication, encryption and data-handling controls.
3. Implement with engineering/security using approved platforms and secret management.
4. Test both allowed and denied behavior, including recovery and abuse cases.
5. Monitor, audit and review permissions or vulnerabilities over time.

PM/TPM usage note: A Technical PM should be comfortable discussing and applying this with engineering; a general PM should understand the concept.

278. Microsoft Entra ID

Microsoft identity platform | TPM Core

WHAT IT IS / WHAT IT DOES	Manage enterprise identities, SSO and application access.
WHEN TO USE IT	For Microsoft B2B/internal products.
PRACTICAL EXAMPLE	Employees access an admin portal using company identities.

Application guide

1. Identify the sensitive asset, threat, user role and business/regulatory requirement.
2. Define least-privilege access, authentication, encryption and data-handling controls.
3. Implement with engineering/security using approved platforms and secret management.
4. Test both allowed and denied behavior, including recovery and abuse cases.
5. Monitor, audit and review permissions or vulnerabilities over time.

PM/TPM usage note: A Technical PM should be comfortable discussing and applying this with engineering; a general PM should understand the concept.

PART 24

Payments, FinTech & Transaction Integrations

Payment PMs need to understand the complete state machine, provider contract, money movement and failure handling.

IN THIS PART	Stripe, Paystack, Flutterwave, Adyen, Checkout.com, Visa / Mastercard Network Integration, Payment Gateway Flow

279. Stripe

Payments platform | Both

WHAT IT IS / WHAT IT DOES	Accept and manage payments, payment methods and related workflows.
WHEN TO USE IT	For supported web/app payment products.
PRACTICAL EXAMPLE	Create payment intent, confirm, receive webhook, update order and refund if needed.

Application guide

1. Map the transaction state machine from initiation to final settlement or failure.
2. Create the provider request securely and persist an internal pending transaction/reference.
3. Handle synchronous response plus authoritative webhook/status verification.
4. Design idempotency, retries, timeouts, reversals, refunds and reconciliation.
5. Test provider sandbox edge cases and monitor success rate, declines and money movement after launch.

PM/TPM usage note: Both PM and TPM roles benefit from this; the required technical depth depends on the product and team.

280. Paystack

Payments platform | Both

WHAT IT IS / WHAT IT DOES	Accept card, bank and transfer payments in supported African markets.
WHEN TO USE IT	For payment products where Paystack coverage fits.
PRACTICAL EXAMPLE	Initialize payment, verify webhook, update transaction and reconcile.

Application guide

1. Map the transaction state machine from initiation to final settlement or failure.
2. Create the provider request securely and persist an internal pending transaction/reference.
3. Handle synchronous response plus authoritative webhook/status verification.
4. Design idempotency, retries, timeouts, reversals, refunds and reconciliation.
5. Test provider sandbox edge cases and monitor success rate, declines and money movement after launch.

PM/TPM usage note: Both PM and TPM roles benefit from this; the required technical depth depends on the product and team.

281. Flutterwave

Payments platform | Both

WHAT IT IS / WHAT IT DOES	Accept multiple payment methods across supported markets.
WHEN TO USE IT	For multi-channel African and international payment flows.
PRACTICAL EXAMPLE	Offer card and bank transfer through one provider integration.

Application guide

1. Map the transaction state machine from initiation to final settlement or failure.
2. Create the provider request securely and persist an internal pending transaction/reference.
3. Handle synchronous response plus authoritative webhook/status verification.
4. Design idempotency, retries, timeouts, reversals, refunds and reconciliation.
5. Test provider sandbox edge cases and monitor success rate, declines and money movement after launch.

PM/TPM usage note: Both PM and TPM roles benefit from this; the required technical depth depends on the product and team.

282. Adyen

Enterprise payments platform | TPM Core

WHAT IT IS / WHAT IT DOES	Provide global payment processing, risk and omnichannel capabilities.
WHEN TO USE IT	For large platforms and global merchants.
PRACTICAL EXAMPLE	Support local methods and monitor authorization/settlement centrally.

Application guide

1. Map the transaction state machine from initiation to final settlement or failure.
2. Create the provider request securely and persist an internal pending transaction/reference.
3. Handle synchronous response plus authoritative webhook/status verification.
4. Design idempotency, retries, timeouts, reversals, refunds and reconciliation.
5. Test provider sandbox edge cases and monitor success rate, declines and money movement after launch.

PM/TPM usage note: A Technical PM should be comfortable discussing and applying this with engineering; a general PM should understand the concept.

283. Checkout.com

Payments platform | TPM Core

WHAT IT IS / WHAT IT DOES	Provide global payment APIs and financial services.
WHEN TO USE IT	For enterprise payment integrations in supported markets.
PRACTICAL EXAMPLE	Analyze decline reasons by issuer and method after launch.

Application guide

1. Map the transaction state machine from initiation to final settlement or failure.
2. Create the provider request securely and persist an internal pending transaction/reference.
3. Handle synchronous response plus authoritative webhook/status verification.
4. Design idempotency, retries, timeouts, reversals, refunds and reconciliation.
5. Test provider sandbox edge cases and monitor success rate, declines and money movement after launch.

PM/TPM usage note: A Technical PM should be comfortable discussing and applying this with engineering; a general PM should understand the concept.

284. Visa / Mastercard Network Integration

Payment network concept | TPM Core

WHAT IT IS / WHAT IT DOES	Understand card authorization and settlement paths through card networks.
WHEN TO USE IT	When card payment behavior, decline codes or schemes matter.
PRACTICAL EXAMPLE	Gateway routes authorization through acquiring and card-network layers.

Application guide

1. Map the transaction state machine from initiation to final settlement or failure.
2. Create the provider request securely and persist an internal pending transaction/reference.
3. Handle synchronous response plus authoritative webhook/status verification.
4. Design idempotency, retries, timeouts, reversals, refunds and reconciliation.
5. Test provider sandbox edge cases and monitor success rate, declines and money movement after launch.

PM/TPM usage note: A Technical PM should be comfortable discussing and applying this with engineering; a general PM should understand the concept.

285. Payment Gateway Flow

FinTech concept | Both

WHAT IT IS / WHAT IT DOES	Map checkout through provider, bank/network, authorization, webhook, internal ledger and settlement.
WHEN TO USE IT	For designing and troubleshooting any transaction product.
PRACTICAL EXAMPLE	User pays → provider authorizes → webhook confirms → order becomes Paid.

Application guide

1. Map the transaction state machine from initiation to final settlement or failure.
2. Create the provider request securely and persist an internal pending transaction/reference.
3. Handle synchronous response plus authoritative webhook/status verification.
4. Design idempotency, retries, timeouts, reversals, refunds and reconciliation.

5. Test provider sandbox edge cases and monitor success rate, declines and money movement after launch.

PM/TPM usage note: Both PM and TPM roles benefit from this; the required technical depth depends on the product and team.

PART 25

Customer Support, CRM, GTM & Engagement

Product work continues after shipping through feedback, commercial context, onboarding and lifecycle communication.

IN THIS PART	Freshdesk, Help Scout, Jira Service Management, Salesforce, HubSpot, Zoho CRM, Mailchimp, Customer.io, Braze, Iterable, Firebase Cloud Messaging (FCM), OneSignal, Twilio, SendGrid, Go-to-Market (GTM) Plan

286. Freshdesk

Support software | Both

WHAT IT IS / WHAT IT DOES	Manage customer tickets, SLAs and knowledge workflows.
WHEN TO USE IT	When support conversations are a major product-feedback source.
PRACTICAL EXAMPLE	OTP-not-received tickets trigger investigation into delivery reliability.

Application guide

1. Define useful ticket/conversation categories tied to product areas.
2. Measure volume and read representative conversations, not only counts.
3. Separate education issues, bugs, policy problems and unmet product needs.
4. Link recurring evidence to discovery, bug or roadmap work.
5. Measure whether the product change actually reduces the underlying support demand.

PM/TPM usage note: Both PM and TPM roles benefit from this; the required technical depth depends on the product and team.

287. Help Scout

Customer support platform | Both

WHAT IT IS / WHAT IT DOES	Manage customer conversations and help-center workflows.
WHEN TO USE IT	For customer-centric support in smaller teams.
PRACTICAL EXAMPLE	Repeated settlement questions reveal a transparency gap.

Application guide

1. Define useful ticket/conversation categories tied to product areas.
2. Measure volume and read representative conversations, not only counts.
3. Separate education issues, bugs, policy problems and unmet product needs.
4. Link recurring evidence to discovery, bug or roadmap work.
5. Measure whether the product change actually reduces the underlying support demand.

PM/TPM usage note: Both PM and TPM roles benefit from this; the required technical depth depends on the product and team.

288. Jira Service Management

Service management platform | Both

WHAT IT IS / WHAT IT DOES	Manage incidents and requests connected to engineering work.
WHEN TO USE IT	When operations/support need structured technical escalation.
PRACTICAL EXAMPLE	Delayed payouts are escalated into an engineering incident.

Application guide

1. Define useful ticket/conversation categories tied to product areas.
2. Measure volume and read representative conversations, not only counts.
3. Separate education issues, bugs, policy problems and unmet product needs.
4. Link recurring evidence to discovery, bug or roadmap work.
5. Measure whether the product change actually reduces the underlying support demand.

PM/TPM usage note: Both PM and TPM roles benefit from this; the required technical depth depends on the product and team.

289. Salesforce

CRM | PM Core

WHAT IT IS / WHAT IT DOES	Manage accounts, opportunities, customer history and sales pipeline.
WHEN TO USE IT	For B2B products where commercial context matters.
PRACTICAL EXAMPLE	Three enterprise prospects request SSO; PM tests whether need is repeatable.

Application guide

1. Define the customer/account segment and commercial question.
2. Review opportunities, objections, lost reasons and recurring requests.
3. Separate one-off high-value requests from repeatable market needs.
4. Link validated needs to discovery and product strategy.
5. Measure adoption, retention or revenue effect after delivery.

PM/TPM usage note: You should be able to lead or independently use this in normal product work.

290. HubSpot

CRM/marketing platform | PM Core

WHAT IT IS / WHAT IT DOES	Manage contacts, deals, campaigns and lifecycle stages.
WHEN TO USE IT	When growth, marketing and sales data inform product decisions.
PRACTICAL EXAMPLE	Compare activation between partner-channel and paid-search trials.

Application guide

1. Define the customer/account segment and commercial question.
2. Review opportunities, objections, lost reasons and recurring requests.
3. Separate one-off high-value requests from repeatable market needs.
4. Link validated needs to discovery and product strategy.
5. Measure adoption, retention or revenue effect after delivery.

PM/TPM usage note: You should be able to lead or independently use this in normal product work.

291. Zoho CRM

CRM | PM Core

WHAT IT IS / WHAT IT DOES	Track leads, accounts, deals and customer interactions.
WHEN TO USE IT	Where Zoho is the business system of record.
PRACTICAL EXAMPLE	Track recurring requests for invoice approval workflows.

Application guide

1. Define the customer/account segment and commercial question.
2. Review opportunities, objections, lost reasons and recurring requests.
3. Separate one-off high-value requests from repeatable market needs.
4. Link validated needs to discovery and product strategy.
5. Measure adoption, retention or revenue effect after delivery.

PM/TPM usage note: You should be able to lead or independently use this in normal product work.

292. Mailchimp

Email marketing platform | PM Core

WHAT IT IS / WHAT IT DOES	Send campaigns and simple onboarding or announcement emails.
WHEN TO USE IT	For newsletters and product communications.
PRACTICAL EXAMPLE	Announce a new seller dashboard and measure adoption afterward.

Application guide

1. Define the user event, audience and job the message should help complete.
2. Choose channel, template, timing, frequency and exit conditions.
3. Integrate event/profile data and test delivery/deep links.
4. Protect preferences, consent and sensitive content.
5. Measure downstream product behavior, not just opens or clicks.

PM/TPM usage note: You should be able to lead or independently use this in normal product work.

293. Customer.io

Lifecycle messaging platform | PM Core

WHAT IT IS / WHAT IT DOES	Send event-triggered email and push journeys.
WHEN TO USE IT	For behavior-based onboarding, activation and retention.
PRACTICAL EXAMPLE	Verified user who has not funded after 24 hours receives guidance.

Application guide

1. Define the user event, audience and job the message should help complete.
2. Choose channel, template, timing, frequency and exit conditions.
3. Integrate event/profile data and test delivery/deep links.
4. Protect preferences, consent and sensitive content.
5. Measure downstream product behavior, not just opens or clicks.

PM/TPM usage note: You should be able to lead or independently use this in normal product work.

294. Braze

Customer engagement platform | PM Core

WHAT IT IS / WHAT IT DOES	Run personalized multi-channel lifecycle campaigns at scale.
WHEN TO USE IT	For sophisticated mobile engagement programs.
PRACTICAL EXAMPLE	Re-engage abandoned checkout only while the order remains valid.

Application guide

1. Define the user event, audience and job the message should help complete.
2. Choose channel, template, timing, frequency and exit conditions.
3. Integrate event/profile data and test delivery/deep links.
4. Protect preferences, consent and sensitive content.
5. Measure downstream product behavior, not just opens or clicks.

PM/TPM usage note: You should be able to lead or independently use this in normal product work.

295. Iterable

Customer engagement platform | PM Core

WHAT IT IS / WHAT IT DOES	Build event-driven cross-channel campaigns and experiments.
WHEN TO USE IT	For onboarding and retention communication.
PRACTICAL EXAMPLE	Nudge sellers who created a store but listed no product.

Application guide

1. Define the user event, audience and job the message should help complete.
2. Choose channel, template, timing, frequency and exit conditions.
3. Integrate event/profile data and test delivery/deep links.
4. Protect preferences, consent and sensitive content.
5. Measure downstream product behavior, not just opens or clicks.

PM/TPM usage note: You should be able to lead or independently use this in normal product work.

296. Firebase Cloud Messaging (FCM)

Push notification service | TPM Core

WHAT IT IS / WHAT IT DOES	Deliver push notifications to mobile and web clients.
WHEN TO USE IT	For transactional and product notifications.
PRACTICAL EXAMPLE	Send payment-success notification with deep link to receipt.

Application guide

1. Define the user event, audience and job the message should help complete.
2. Choose channel, template, timing, frequency and exit conditions.
3. Integrate event/profile data and test delivery/deep links.
4. Protect preferences, consent and sensitive content.
5. Measure downstream product behavior, not just opens or clicks.

PM/TPM usage note: A Technical PM should be comfortable discussing and applying this with engineering; a general PM should understand the concept.

297. OneSignal

Customer messaging platform | Both

WHAT IT IS / WHAT IT DOES	Send push, in-app, email and other messaging depending on setup.
WHEN TO USE IT	For simpler cross-channel notification orchestration.
PRACTICAL EXAMPLE	Notify buyer when order becomes Out for Delivery.

Application guide

1. Define the user event, audience and job the message should help complete.
2. Choose channel, template, timing, frequency and exit conditions.
3. Integrate event/profile data and test delivery/deep links.
4. Protect preferences, consent and sensitive content.
5. Measure downstream product behavior, not just opens or clicks.

PM/TPM usage note: Both PM and TPM roles benefit from this; the required technical depth depends on the product and team.

298. Twilio

Communications platform | TPM Core

WHAT IT IS / WHAT IT DOES	Send SMS, OTP, voice and messaging through APIs.
WHEN TO USE IT	For authentication and time-sensitive communications.
PRACTICAL EXAMPLE	Send login OTP and capture delivery failures for fallback.

Application guide

1. Define the user event, audience and job the message should help complete.
2. Choose channel, template, timing, frequency and exit conditions.
3. Integrate event/profile data and test delivery/deep links.
4. Protect preferences, consent and sensitive content.
5. Measure downstream product behavior, not just opens or clicks.

PM/TPM usage note: A Technical PM should be comfortable discussing and applying this with engineering; a general PM should understand the concept.

299. SendGrid

Email delivery platform | TPM Core

WHAT IT IS / WHAT IT DOES	Send transactional and bulk email through APIs.
WHEN TO USE IT	For receipts, password resets and product emails.
PRACTICAL EXAMPLE	Email a transaction receipt after successful payment.

Application guide

1. Define the user event, audience and job the message should help complete.
2. Choose channel, template, timing, frequency and exit conditions.
3. Integrate event/profile data and test delivery/deep links.
4. Protect preferences, consent and sensitive content.
5. Measure downstream product behavior, not just opens or clicks.

PM/TPM usage note: A Technical PM should be comfortable discussing and applying this with engineering; a general PM should understand the concept.

300. Go-to-Market (GTM) Plan

Launch framework | PM Core

WHAT IT IS / WHAT IT DOES	Coordinate target audience, positioning, channels, enablement, rollout and measurement.
WHEN TO USE IT	Before meaningful launches.
PRACTICAL EXAMPLE	Launch escrow with seller education, support readiness and phased rollout.

Application guide

1. Define the market, user, product or decision boundary.
2. Gather customer, competitor, financial and operational evidence.
3. Apply the framework to make explicit choices rather than a long wish list.
4. Align stakeholders on what is in and out of focus.
5. Translate the strategy into outcomes, metrics, themes and roadmap bets.

PM/TPM usage note: You should be able to lead or independently use this in normal product work.

PART 26

AI Tools for Product Managers

AI can accelerate product work, but it should not replace evidence, judgment or secure handling of company data.

IN THIS PART	ChatGPT, Claude, Gemini, Perplexity, GitHub Copilot, Cursor, AI Usage Guardrails

301. ChatGPT

General AI assistant | Both

WHAT IT IS / WHAT IT DOES	Support brainstorming, synthesis, drafting, technical explanation and analysis.
WHEN TO USE IT	For bounded tasks with approved context and verification.
PRACTICAL EXAMPLE	Synthesize interview notes into themes and manually validate each theme.

Application guide

1. Define a bounded task and provide only approved, non-sensitive context.
2. Ask for a structured output and explicit assumptions.
3. Use AI to accelerate drafting, analysis or exploration—not to manufacture evidence.
4. Verify factual, technical and numerical claims against trusted sources or the product system.
5. Edit the output, preserve human accountability and follow company AI/security policy.

PM/TPM usage note: Both PM and TPM roles benefit from this; the required technical depth depends on the product and team.

302. Claude

General AI assistant | Both

WHAT IT IS / WHAT IT DOES	Analyze and draft from long documents and text contexts.
WHEN TO USE IT	For long-form synthesis where policy permits.

PRACTICAL EXAMPLE	Compare several PRDs and identify contradictory requirements.

Application guide

1. Define a bounded task and provide only approved, non-sensitive context.
2. Ask for a structured output and explicit assumptions.
3. Use AI to accelerate drafting, analysis or exploration—not to manufacture evidence.
4. Verify factual, technical and numerical claims against trusted sources or the product system.
5. Edit the output, preserve human accountability and follow company AI/security policy.

PM/TPM usage note: Both PM and TPM roles benefit from this; the required technical depth depends on the product and team.

303. Gemini

General/multimodal AI assistant | Both

WHAT IT IS / WHAT IT DOES	Support text, image and productivity analysis across multimodal work.
WHEN TO USE IT	For approved multimodal or Google-oriented tasks.
PRACTICAL EXAMPLE	Summarize customer notes and generate workshop questions.

Application guide

1. Define a bounded task and provide only approved, non-sensitive context.
2. Ask for a structured output and explicit assumptions.
3. Use AI to accelerate drafting, analysis or exploration—not to manufacture evidence.
4. Verify factual, technical and numerical claims against trusted sources or the product system.
5. Edit the output, preserve human accountability and follow company AI/security policy.

PM/TPM usage note: Both PM and TPM roles benefit from this; the required technical depth depends on the product and team.

304. Perplexity

AI research/search tool | PM Core

WHAT IT IS / WHAT IT DOES	Explore current external topics with linked sources.
WHEN TO USE IT	For competitor and market research requiring web evidence.
PRACTICAL EXAMPLE	Research competitor pricing and current market trends.

Application guide

1. Define a bounded task and provide only approved, non-sensitive context.
2. Ask for a structured output and explicit assumptions.
3. Use AI to accelerate drafting, analysis or exploration—not to manufacture evidence.
4. Verify factual, technical and numerical claims against trusted sources or the product system.
5. Edit the output, preserve human accountability and follow company AI/security policy.

PM/TPM usage note: You should be able to lead or independently use this in normal product work.

305. GitHub Copilot

AI coding assistant | TPM Awareness

WHAT IT IS / WHAT IT DOES	Assist engineers with code and technical tasks inside development workflows.

WHEN TO USE IT	To understand AI-assisted coding and for qualified technical use.
PRACTICAL EXAMPLE	Engineer drafts API tests with Copilot, then reviews and runs them.

Application guide

1. Define a bounded task and provide only approved, non-sensitive context.
2. Ask for a structured output and explicit assumptions.
3. Use AI to accelerate drafting, analysis or exploration—not to manufacture evidence.
4. Verify factual, technical and numerical claims against trusted sources or the product system.
5. Edit the output, preserve human accountability and follow company AI/security policy.

PM/TPM usage note: Understand its role and vocabulary; specialist operation is normally owned by engineering or security.

306. Cursor

AI-assisted code editor | TPM Awareness

WHAT IT IS / WHAT IT DOES	Combine an IDE with AI assistance over a codebase.
WHEN TO USE IT	For technical teams using AI to navigate or modify code.
PRACTICAL EXAMPLE	Explain an API route, then verify behavior against tests and docs.

Application guide

1. Define a bounded task and provide only approved, non-sensitive context.
2. Ask for a structured output and explicit assumptions.
3. Use AI to accelerate drafting, analysis or exploration—not to manufacture evidence.
4. Verify factual, technical and numerical claims against trusted sources or the product system.
5. Edit the output, preserve human accountability and follow company AI/security policy.

PM/TPM usage note: Understand its role and vocabulary; specialist operation is normally owned by engineering or security.

307. AI Usage Guardrails

Operating practice | Both

WHAT IT IS / WHAT IT DOES	Protect confidentiality, accuracy and accountability when using AI.
WHEN TO USE IT	Whenever AI is used in PM or TPM workflows.
PRACTICAL EXAMPLE	Use synthetic data instead of real customer account details.

Application guide

1. Define a bounded task and provide only approved, non-sensitive context.
2. Ask for a structured output and explicit assumptions.
3. Use AI to accelerate drafting, analysis or exploration—not to manufacture evidence.
4. Verify factual, technical and numerical claims against trusted sources or the product system.
5. Edit the output, preserve human accountability and follow company AI/security policy.

PM/TPM usage note: Both PM and TPM roles benefit from this; the required technical depth depends on the product and team.

PART 27

Meeting Transcription & Research Capture

These tools reduce manual note-taking, but recording, privacy and retention rules still matter.

IN THIS PART	Otter.ai, Fireflies.ai, Fathom, Zoom Transcription, Microsoft Teams Transcription

308. Otter.ai

Transcription software | PM Core

WHAT IT IS / WHAT IT DOES	Transcribe calls and make meeting content searchable.
WHEN TO USE IT	For interviews or meetings where recording is permitted.
PRACTICAL EXAMPLE	Transcribe a customer interview and tag evidence in research notes.

Application guide

1. Confirm recording/transcription policy and participant consent where required.
2. Set the meeting or research objective and use Otter.ai to capture the conversation.
3. Review the transcript or generated summary for important errors.
4. Extract decisions, evidence and action items with owners.
5. Store durable output in the research repository, PRD, decision log or delivery system.

PM/TPM usage note: You should be able to lead or independently use this in normal product work.

309. Fireflies.ai

Meeting assistant | Both

WHAT IT IS / WHAT IT DOES	Record, transcribe and summarize meetings with action items.
WHEN TO USE IT	For recurring team or stakeholder meetings.
PRACTICAL EXAMPLE	Confirm generated action items and attach them to the project.

Application guide

1. Confirm recording/transcription policy and participant consent where required.
2. Set the meeting or research objective and use Fireflies.ai to capture the conversation.
3. Review the transcript or generated summary for important errors.
4. Extract decisions, evidence and action items with owners.
5. Store durable output in the research repository, PRD, decision log or delivery system.

PM/TPM usage note: Both PM and TPM roles benefit from this; the required technical depth depends on the product and team.

310. Fathom

Meeting assistant | PM Core

WHAT IT IS / WHAT IT DOES	Capture transcripts, highlights and summaries from calls.
WHEN TO USE IT	For customer and stakeholder conversations.
PRACTICAL EXAMPLE	Highlight exact pain-point moments during discovery.

Application guide

1. Confirm recording/transcription policy and participant consent where required.
2. Set the meeting or research objective and use Fathom to capture the conversation.
3. Review the transcript or generated summary for important errors.
4. Extract decisions, evidence and action items with owners.
5. Store durable output in the research repository, PRD, decision log or delivery system.

PM/TPM usage note: You should be able to lead or independently use this in normal product work.

311. Zoom Transcription

Built-in transcription | Both

WHAT IT IS / WHAT IT DOES	Create transcripts inside Zoom meetings.
WHEN TO USE IT	When enterprise controls favor built-in meeting tools.
PRACTICAL EXAMPLE	Review transcript for critical customer wording.

Application guide

1. Confirm recording/transcription policy and participant consent where required.
2. Set the meeting or research objective and use Zoom Transcription to capture the conversation.
3. Review the transcript or generated summary for important errors.
4. Extract decisions, evidence and action items with owners.
5. Store durable output in the research repository, PRD, decision log or delivery system.

PM/TPM usage note: Both PM and TPM roles benefit from this; the required technical depth depends on the product and team.

312. Microsoft Teams Transcription

Built-in transcription | Both

WHAT IT IS / WHAT IT DOES	Create transcripts inside Teams meetings.
WHEN TO USE IT	In Microsoft enterprise environments.
PRACTICAL EXAMPLE	Confirm wording of a regulatory requirement from a meeting.

Application guide

1. Confirm recording/transcription policy and participant consent where required.
2. Set the meeting or research objective and use Microsoft Teams Transcription to capture the conversation.
3. Review the transcript or generated summary for important errors.
4. Extract decisions, evidence and action items with owners.
5. Store durable output in the research repository, PRD, decision log or delivery system.

PM/TPM usage note: Both PM and TPM roles benefit from this; the required technical depth depends on the product and team.

PART 28

Incident Management & Operational Readiness

When production fails, teams need fast mitigation, factual communication and learning after recovery.

IN THIS PART	PagerDuty, Opsgenie, Statuspage, Incident Triage, Rollback / Kill Switch, Postmortem

313. PagerDuty

Incident response platform | TPM Core

WHAT IT IS / WHAT IT DOES	Page on-call responders and coordinate escalation.
WHEN TO USE IT	For production incidents requiring rapid technical response.
PRACTICAL EXAMPLE	Payment error-rate alert pages the on-call engineer.

Application guide

1. Confirm the incident, scope and customer/business impact quickly.
2. Assign incident leadership and the technical owners needed to stabilize service.
3. Mitigate first through rollback, feature flag, failover or other safe action.
4. Communicate factual updates while preserving a timeline and evidence.
5. Run RCA/postmortem and track preventive actions to completion.

PM/TPM usage note: A Technical PM should be comfortable discussing and applying this with engineering; a general PM should understand the concept.

314. Opsgenie

Alerting/incident management | TPM Core

WHAT IT IS / WHAT IT DOES	Route alerts and manage on-call escalation.
WHEN TO USE IT	In teams using Atlassian-style incident workflows.
PRACTICAL EXAMPLE	Database saturation alert routes to platform team.

Application guide

1. Confirm the incident, scope and customer/business impact quickly.
2. Assign incident leadership and the technical owners needed to stabilize service.
3. Mitigate first through rollback, feature flag, failover or other safe action.
4. Communicate factual updates while preserving a timeline and evidence.
5. Run RCA/postmortem and track preventive actions to completion.

PM/TPM usage note: A Technical PM should be comfortable discussing and applying this with engineering; a general PM should understand the concept.

315. Statuspage

Service status communication | Both

WHAT IT IS / WHAT IT DOES	Publish customer-facing availability and incident updates.
WHEN TO USE IT	When outages materially affect customers.
PRACTICAL EXAMPLE	Card payments degraded; bank transfer remains available.

Application guide

1. Confirm the incident, scope and customer/business impact quickly.
2. Assign incident leadership and the technical owners needed to stabilize service.
3. Mitigate first through rollback, feature flag, failover or other safe action.
4. Communicate factual updates while preserving a timeline and evidence.
5. Run RCA/postmortem and track preventive actions to completion.

PM/TPM usage note: Both PM and TPM roles benefit from this; the required technical depth depends on the product and team.

316. Incident Triage

Operational process | Both

WHAT IT IS / WHAT IT DOES	Assess impact, severity, scope and ownership rapidly.
WHEN TO USE IT	At the beginning of a production incident.
PRACTICAL EXAMPLE	Disable a broken checkout experiment while engineering investigates.

Application guide

1. Confirm the incident, scope and customer/business impact quickly.
2. Assign incident leadership and the technical owners needed to stabilize service.
3. Mitigate first through rollback, feature flag, failover or other safe action.
4. Communicate factual updates while preserving a timeline and evidence.
5. Run RCA/postmortem and track preventive actions to completion.

PM/TPM usage note: Both PM and TPM roles benefit from this; the required technical depth depends on the product and team.

317. Rollback / Kill Switch

Release safety mechanism | TPM Core

WHAT IT IS / WHAT IT DOES	Return to a known-good version or disable a problematic feature.
WHEN TO USE IT	When a release creates unacceptable risk.
PRACTICAL EXAMPLE	Turn off new payment routing after approval rate collapses.

Application guide

1. Confirm the incident, scope and customer/business impact quickly.
2. Assign incident leadership and the technical owners needed to stabilize service.
3. Mitigate first through rollback, feature flag, failover or other safe action.
4. Communicate factual updates while preserving a timeline and evidence.
5. Run RCA/postmortem and track preventive actions to completion.

PM/TPM usage note: A Technical PM should be comfortable discussing and applying this with engineering; a general PM should understand the concept.

318. Postmortem

Incident learning document | Both

WHAT IT IS / WHAT IT DOES	Document impact, timeline, causes, response and prevention.
WHEN TO USE IT	After meaningful incidents or near misses.
PRACTICAL EXAMPLE	Add health checks, better alerts and tested failover after outage.

Application guide

1. Confirm the incident, scope and customer/business impact quickly.
2. Assign incident leadership and the technical owners needed to stabilize service.
3. Mitigate first through rollback, feature flag, failover or other safe action.
4. Communicate factual updates while preserving a timeline and evidence.
5. Run RCA/postmortem and track preventive actions to completion.

PM/TPM usage note: Both PM and TPM roles benefit from this; the required technical depth depends on the product and team.

PM vs Technical PM Competency Matrix

The Technical PM is still a Product Manager. The technical layer is additional depth, not a replacement for customer discovery, product judgment or outcome ownership.

Area	PM depth	TPM depth	What good looks like
Customer research	Advanced	Strong	Can turn evidence into clear problems and opportunities.
Product strategy	Advanced	Advanced	Can make explicit choices and tie them to outcomes.
Roadmapping/prioritization	Advanced	Advanced	Can sequence work with evidence, dependencies and trade-offs.
UX/Figma	Strong	Working	Can reason about flows, states and usability.
Analytics	Strong	Strong	Can define metrics and interpret funnels/cohorts.
SQL	Working	Strong	TPM can investigate data with safe read queries.
APIs/Postman/OpenAPI	Working	Advanced	TPM can read contracts, test endpoints and drive integration behavior.
Databases	Conceptual	Strong conceptual	TPM understands schema/data-flow implications.
Architecture	Conceptual	Strong	TPM maps services, dependencies and failure modes.
Git/PR/CI-CD	Awareness	Strong working	TPM can trace a change from ticket to deployment.
Cloud/Infrastructure	Awareness	Strong conceptual	TPM connects architecture to scale, latency, cost and availability.
Observability/Incidents	Working	Advanced	TPM can quantify impact, navigate telemetry and coordinate response.
Security/Auth	Working	Strong	Both define safe product behavior; TPM goes deeper into implementation constraints.
Coding	Optional	Optional / helpful	Technical fluency matters more than being a full-time developer.

End-to-End Product Lifecycle: Which Tools Fit Each Stage

Use this as the mental model connecting the handbook. The same product may move back and forth between stages as new evidence appears.

Stage	Typical tools	Primary question
1. Think	Problem Statement, 5 Whys, First Principles, JTBD	Understand the real problem.
2. Discover	Interviews, Surveys, Dovetail, Hotjar, Clarity	Gather evidence from people and behavior.

3. Map	Journey Map, Service Blueprint, Miro, FigJam	Make the experience and dependencies visible.
4. Strategy	Vision, Product Strategy, SWOT, Canvas, OKRs, North Star	Choose where to focus and what outcome matters.
5. Prioritize	RICE, MoSCoW, Kano, Impact/Effort, Cost of Delay	Decide what deserves capacity now.
6. Document	PRD, Feature Spec, Stories, Acceptance Criteria, RFC	Make intent clear and testable.
7. Design	Figma, Wireframes, Maze/UserTesting	Validate the experience before expensive build.
8. Plan Delivery	Jira, Azure Boards, Linear, Roadmap tools	Sequence and break work into executable units.
9. Integrate	OpenAPI, Swagger, Postman, Webhooks, API gateways	Define and validate system contracts.
10. Build	GitHub/GitLab/Azure Repos, PRs, IDEs	Engineering implements and reviews changes.
11. Test	TestRail, Zephyr, BrowserStack, Postman, automation	Validate normal, edge, failure and recovery behavior.
12. Release	CI/CD, environments, feature flags	Move changes safely to users.
13. Monitor	Datadog, Sentry, Grafana, logs	Understand technical health and incidents.
14. Measure	Amplitude, Mixpanel, GA4, SQL, BI	Measure user behavior and business outcomes.
15. Learn	Experiments, interviews, postmortems, retrospectives	Turn evidence into the next decision.

Recommended Core Stack

You do not need every application. Learn one strong option per category, then add alternatives when your workplace requires them.

Learning area	Recommended starting stack
Product thinking	Problem Statement + 5 Whys + JTBD + Hypothesis
Discovery	Interviews + survey tool + Dovetail or a disciplined research repository
Whiteboarding	Miro or FigJam
Documentation	Notion or Confluence
Design collaboration	Figma
Prioritization	RICE + MoSCoW + Impact/Effort
Delivery	Jira or Azure Boards
Roadmap	Now/Next/Later using Productboard, Jira Product Discovery or a simple tool
Analytics	Amplitude or Mixpanel + GA4 + Excel/Sheets
TPM API core	HTTP/REST + JSON + Postman + OpenAPI/Swagger + Webhooks

TPM data core	SQL + relational database concepts
Engineering workflow	Git/GitHub + Pull Requests + CI/CD + environments
Production	Datadog or New Relic + Sentry + logs
Security	Authentication + Authorization + RBAC + OAuth/JWT + secrets/PII
Scale	Cloud basics + architecture diagrams + Docker/Kubernetes awareness

12-Week Hands-On Learning Roadmap

The fastest way to learn PM/TPM tools is to apply them to one product repeatedly instead of watching disconnected tutorials.

Week	Focus	Hands-on application
Week 1	Thinking	Choose one product problem. Write a problem statement, 5 Whys, JTBD and one hypothesis.
Week 2	Discovery	Create an interview guide and survey; synthesize sample feedback into themes.
Week 3	Journey & UX	Map a journey in Miro/FigJam and create or review a Figma flow including edge states.
Week 4	Requirements	Write one complete feature spec/PRD with stories, criteria, metrics, risks and non-goals.
Week 5	Prioritization & Roadmap	Score eight ideas with RICE, classify with MoSCoW and make a Now/Next/Later roadmap.
Week 6	Delivery	Create Epic → Stories → Tasks/Bugs in Jira/Azure Boards and run a mock refinement/sprint plan.
Week 7	Analytics & SQL	Define an event plan, build a sample funnel and practice SELECT, WHERE, GROUP BY and JOIN.
Week 8	APIs	Learn HTTP/JSON/status codes, test sandbox APIs in Postman and read an OpenAPI contract.
Week 9	Integrations	Design a webhook flow, idempotency behavior, error states and a sequence diagram.
Week 10	Engineering Workflow	Learn repository, branch, commit and PR; trace a sample change through CI to staging.
Week 11	Production & Security	Read sample logs/metrics, write an incident postmortem and create an access/security checklist.

Week 12	Capstone	Take one feature from problem → PRD → design → backlog → API → test → release → measurement.

Quick Reference: Which Tool Should I Use?

Product situation	Start with
We do not know the real problem.	Interviews + analytics + 5 Whys + Problem Statement
We have too many ideas.	Opportunity Solution Tree + RICE + Impact/Effort
Stakeholders disagree on direction.	Product Strategy + OKRs + Decision Log
The flow is confusing.	Journey Map + Figma + Maze/UserTesting + session replay
Engineering says requirements are unclear.	Feature Spec/PRD + acceptance criteria + diagrams
The API integration is failing.	OpenAPI/Swagger + Postman + logs + correlation IDs
We keep creating duplicate transactions.	Idempotency + request tracing + webhook design + tests
We cannot tell if a release is ready.	Definition of Done + test plan + staging + CI/CD + release checklist
Production is slow.	Datadog/New Relic/Grafana + latency percentiles + traces/logs
A release caused an outage.	Feature flag/rollback + incident triage + RCA + postmortem
We shipped but do not know if it worked.	Instrumentation + funnel/cohort + North Star/OKR metrics
Support volume is high.	Zendesk/Intercom tags + ticket analysis + RCA + journey map
I need a simple PM stack.	Notion/Confluence + Figma/FigJam + Jira + Sheets + Amplitude/Mixpanel
I need a practical TPM stack.	Core PM stack + Postman + OpenAPI + SQL + GitHub + CI/CD + Datadog/Sentry

Final Principle

A strong Product Manager is not the person with the most tools. It is the person who can choose the right tool for the decision, create clarity for the team and measure whether the product actually became better for the user and the business.

A strong Technical Product Manager adds the ability to connect that product intent to APIs, data, architecture, engineering workflow, reliability, security and production reality without losing the customer outcome.