

API Analytics for Product Managers

Understand key API metrics that can help you grow your business



DEEPA GOYAL

Foreword by Kin Lane, Chief Evangelist, Postman Inc.

Author of The API-First Transformation

Preface

Application programming interfaces (APIs) have become a ubiquitous part of web technologies because they provide a standard way for different systems and applications to communicate and share data and functionality. This allows for greater flexibility, scalability, innovation, and interoperability in the web ecosystem.

As more and more organizations build APIs for use both inside and outside the company, different areas of design, documentation, governance, and life cycle have become more important. However, until now, APIs have only been viewed as technical components. I want to change the way APIs are thought of by seeing them as fully qualified products.

Because “API as a product” refers to a “product,” we consider an application program to be a standalone product rather than a technical component of a larger system. This means that an API is developed, marketed, and supported in a similar way as other products, with a focus on meeting the needs of specific user groups and delivering value to them.

The “API as a product” approach lets companies sell their data and services, while also giving developers a useful tool for making new apps and services. APIs as products also have revenue-generation potential, as they can be used as products themselves, either by licensing them to a third party or charging for their usage by end users.

I have organized this methodology into four key areas:

- How to manage APIs as products
- How to build customer empathy for API products
- How to design metrics for measuring APIs from the infrastructure, product, and business perspectives
- How to identify the right **key performance indicators (KPIs)** for API products and build a product strategy

This audiobook will guide you through the process of managing APIs as products, building customer empathy, designing metrics for measuring success, and identifying KPIs to inform your product strategy. Whether you are new to the field or a seasoned professional, this audiobook will provide valuable insights and best practices for optimizing the performance and profitability of your API products. Let’s dive in and discover how to unlock the full potential of your APIs.

Who this audiobook is for

This audiobook is for product managers, business leaders, and developers who are looking to get the most out of their APIs. It gives an in-depth look at the most important ideas and best practices related to API analytics and product management. This makes it an essential resource for anyone who builds, deploys, or manages API products.

Additionally, this audiobook serves as a valuable resource for security teams, sales teams, operations personnel, and user experience researchers who are involved with APIs. These teams will benefit from the audiobook's detailed guidance on how to design metrics for measuring API performance, as well as the strategies for understanding user behavior and feedback that can inform the design of more scalable, secure, and user-friendly APIs.

What this audiobook covers

Part 1, The API Landscape

The objective of this part is to introduce APIs as products and shed light on how large the market is for API products. You will learn about product management concepts and how they apply to APIs. This part will also explain the life cycle and maturity of an API.

Chapter 1, API as a Product

APIs go beyond web products or mobile apps with the UI. In this chapter, you will be introduced to the idea of an API as a product and how a vast universe of products is built using APIs. This chapter will also look at some of the most well-known API companies and how they've made successful API products.

Chapter 2, API Product Management

API product management has evolved into a specialization with some fundamental pieces that a product manager must understand to effectively make product decisions. This chapter will go over various types of products from a product management perspective and how they require different skill sets.

Chapter 3, API Life Cycle and Maturity

This chapter will help you understand why the API product life cycle, methodology for establishing API governance, and use of the API maturity model are important for organizations, as they help them to ensure that their APIs are developed and managed in a consistent, efficient, and effective manner, aligned with the organization's goals, policies, and standards, and that they can evolve over time to meet changing business needs. This chapter also presents case studies of some of the leading API products and how they present their API maturity to their customers.

Chapter 4, Building and Managing API Products

This chapter will talk about the unique design challenge of defining an API product MVP. As the API product matures, the challenges can get more complicated, and in addition to growth, retention and churn might also become very crucial in product strategy. At each step of API maturity, the stakeholders' and customers' needs and expectations change. This chapter explains what we mean by "API maturity" and how it relates to the API life cycle.

Chapter 5, Growth for API Products

Growth for APIs refers to the process of increasing the usage and adoption of an API by different user groups, such as developers, businesses, and consumers. Growth can be achieved by identifying, helping identify, and helping the target audience; developing a marketing, pricing, and sales strategy that effectively communicates the value and benefits of the API to the target audience; and helping to generate interest and awareness. We can utilize product-led growth and community-led growth for API growth.

Chapter 6, Support Models for API Products

The customer support strategy for API products is different from that for other products. This chapter dives into the standard methodologies for creating a robust support model for APIs that scales with the product and delivers value for customers.

Part 2, Understanding the Developer

This part is focused on the primary customer of APIs: the developer. It is evidently important to understand the developer journey in order to establish a growth funnel for your API product. You will also learn about signals for activation, engagement, retention, and scale.

Chapter 7, Walking in the Customer's Shoes

This chapter describes what product funnels are and how they are established for various types of products. You will be introduced to concepts such as activation, retention, engagement, and churn.

Chapter 8, Customer Expectations and Goals

This chapter helps you understand the goals of both the business and the customer to be able to establish roadmaps that build a long-term API strategy for the organization. This chapter will introduce you to tools such as CSAT, NPS, and other user research mechanisms to develop an understanding of customers. You will learn how to understand your customers so you can get them to use your product, and set up a product strategy that gets customers started on a long-term relationship with your product.

Chapter 9, Components of API Experience

In this chapter, you will learn about a few key ingredients for creating a great API experience. It is important to understand how some of these experiences have been designed across the industry to be able to shape any API product. We look at things such as API references, status pages, SDKs, CLIs, and so on that are part of the API experience.

Part 3, A Deep Dive into Key Metrics for API Products

This part will introduce you to the reasoning behind API metrics. You will do a deep dive into all dimensions of the user journey and learn about a vast set of metrics that you can track across the infrastructure, product, and business dimensions of your APIs.

Chapter 10, Infrastructure Metrics

Infrastructure metrics are crucial for APIs that serve a large or a small customer base. It is important that APIs be reliable. In this chapter, you will learn how to measure infrastructure metrics and various tools that provide an easy setup to get them.

Chapter 11, API Product Metrics

In this chapter, you'll find out about the different metrics you can use to learn more about your customers. The metrics you learn in this chapter can be used across all the stakeholders in your product to align on common goals and priorities.

Chapter 12, Business Metrics

In this chapter, you'll learn about the business metrics you need to set up and keep track of regularly in order to measure the business impact of your infrastructure and product development projects.

Part 4, Setting a Cohesive Analytics Strategy

It is not sufficient to merely have metrics set up. It is also important to understand how to evaluate the quality of the metrics and how to make sure they are extensive and robust. This part describes the possible ways in which metrics can be analyzed and evaluated. You will learn how to remove blind spots and avoid vanity metrics that may not be true representations of product health.

Chapter 13, Drawing the Big Picture with Data

This chapter dives into the evaluation of metrics once a measurement is done. The first step is to establish a baseline and find ways of benchmarking it. Metrics should not be standalone; they need to be evaluated in the context of other metrics. This chapter also establishes the concept of correlation in metrics and dives into how to set clusters of metrics so that there is a set of metrics that are seen in relation to each other and not all metrics at once.

Chapter 14, Keeping Metrics Honest

This chapter talks about combining qualitative and quantitative data to form hypotheses and drive insights that may not be easily available without combining these two. This chapter also explains what leading and lagging metrics are and how to find them in a set of related metrics.

Chapter 15, Counter Metrics to Avoid Blind Spots

In this chapter, you will learn about counter metrics to remove bias from the metrics-setting process so that blind spots might be addressed. This chapter also introduces the concept of gameability with examples and explains the consequences of gameable and vanity metrics.

Chapter 16, Decision-Making with Data

In this chapter, you will learn about how effective product leadership requires setting short-term and long-term goals and strategically communicating those goals to stakeholders through storytelling. This approach helps to establish a clear direction for the product and the team, aligning everyone around a common vision and enabling the team to work together to achieve success.

To get the most out of this audiobook

It is recommended that you have a good understanding of web development, software development, product management, and data analysis to get the most out of this audiobook. The prerequisites include the following:

- A basic understanding of what APIs are and how they work
- Familiarity with programming concepts and experience with web development would be beneficial, as would an understanding of the software development life cycle and product management concepts
- It would be helpful for you to have some prior experience with data analysis and an understanding of KPIs, as the audiobook covers how to design metrics for measuring APIs from the infrastructure, product, and business perspectives, and how to identify the right KPIs for API products and build a product strategy

- Additionally, it would be beneficial for you to have some understanding of user experience research and user-centered design, as the audiobook covers how to build customer empathy for API products and how to use customer research to inform product development

There is no special software installation required for this audiobook.

Chapter 1

Figures

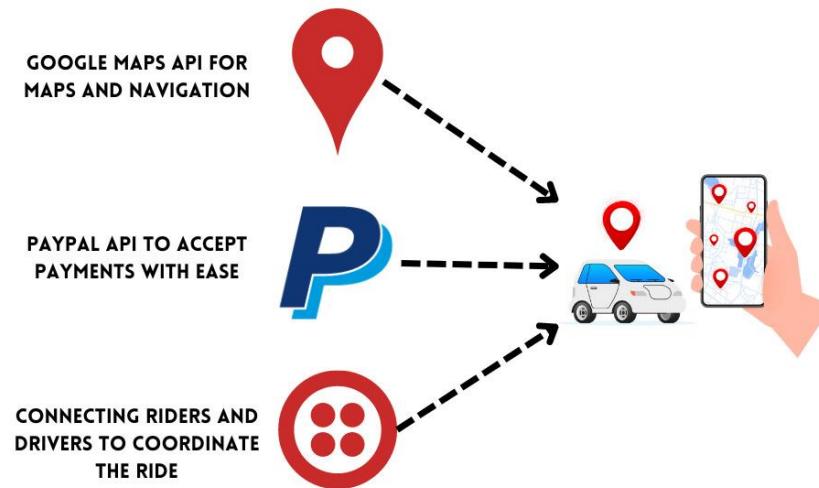


Figure 1.1 – Examples of APIs being used during a single ride using a ride-sharing application such as Uber

Chapter 2

Figures



Figure 2.1 – Stakeholders for product managers

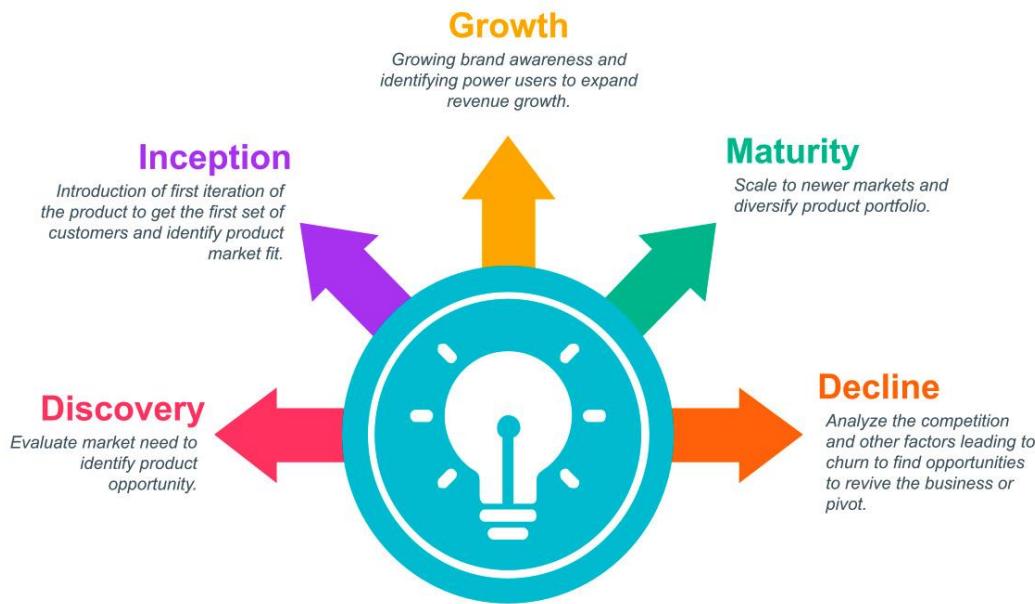


Figure 2.2 – Five stages of the product life cycle

Chapter 3

Figures

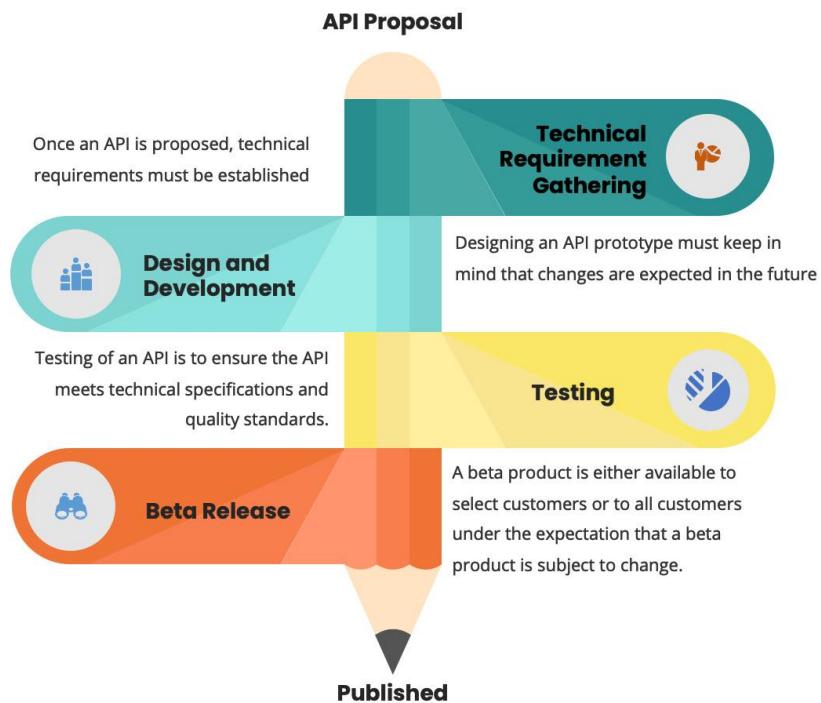


Figure 3.1 – API product life cycle

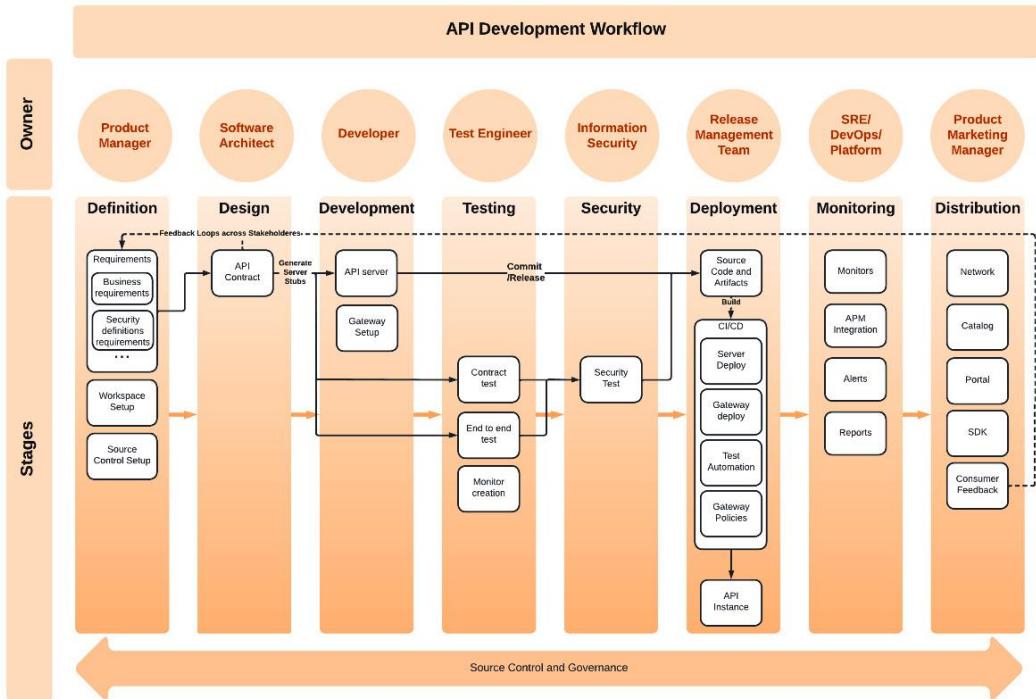


Figure 3.2 – API development workflow



Figure 3.3 – API maturity levels

Applicable Services	Monthly Uptime Percentage Threshold	Service Credit
"Services" as defined in the Agreement	99.95%	10% credit equivalent
During calendar months in which Customer has purchased the Twilio Administration Edition or Twilio Enterprise Edition	99.99% for Twilio Services	10% credit equivalent
During calendar months in which Customer has purchased the Twilio SendGrid Enterprise Solution	99.99% for SendGrid Services	10% credit equivalent

Figure 3.4 – Twilio's Publicly Communicated SLAs across the different APIs they offer

Endpoint name	Replacement	Deprecated	Retirement
RenewToken	OAuth.ObtainToken Migration guide	2021-05-13	2022-05-13
ListEmployees	ListTeamMembers Migration Guide	2020-08-26	2021-08-26
RetrieveEmployee	RetrieveEmployee Migration Guide	2020-08-26	2021-08-26
ListEmployeeWages	ListTeamMemberWages Migration Guide	2020-08-26	2021-08-26
GetEmployeeWage	GetTeamMemberWage Migration Guide	2020-08-26	2021-08-26
ListLoyaltyPrograms	RetrieveLoyaltyProgram Migration Guide	2021-05-13	2022-05-13
CreateCustomerCard	CreateCard or CreateGiftCard Migration Guide	2021-06-16	2022-06-16
DeleteCustomerCard	DisableCard or UnlinkCustomerFromGiftCard Migration Guide	2021-06-16	2022-06-16

Figure 3.5 – Block's publicly communicated deprecation and retirement status and timelines for APIs

Quick Reference Table

Description	Beta	EA	GA	Deprecated
Contact with Product Team	✓	✗	✗	NA
API Changes	Subject to change	Backwards compatible	Backwards compatible	N/A
Okta Support	✗	✓	✓	✓
Service-level agreements	✗	✓	✓	✓
Announced in Release Notes	✗	✓	✓	✓
In preview orgs	By invitation or self-service, depending on the feature	By request or self-service, depending on the feature	✓	✓
In production orgs	✗	By request or self-service, depending on the feature	✓	✓
Documentation	Limited	✓	✓	NA

Figure 3.6 – Okta’s publicly communicated API maturity levels and respective SLAs

Characteristic	Launch Stage		
	Alpha	Beta	General Availability (GA)
Purpose and benefit	Purpose is to test and develop API features and functionality requirements. Opportunity to preview and influence future eBay API features.	Purpose is to release API capabilities for feedback. Opportunity to get early access to new APIs before GA.	Purpose is to release API features for production use.
Who can access	Available to select eBay Developers Program Members with NDA.	Available to all eBay Developers Program Members, may be subject to eligibility criteria.	Available to all eBay Developers Program Members, may be subject to eligibility criteria.
What support is provided	Support is provided by account management support only, and may not have formal documentation	Standard technical support channel available, with draft documentation.	Standard technical support, with full documentation available.
API design stability	Changes to API likely from feedback in Alpha testing, and Beta may not be backward compatible with Alpha.	Changes to API possible during Beta period and GA may not be backward compatible with Beta.	Stable Interface Design
Quality	May have significant design and availability issues.	May have design and availability issues.	Production
Intended use:	Test environments or limited-use testing.	Limited production use but not for <u>business critical</u> use.	Production
Usable for customer onboarding?	No	Yes	Yes
Usable for load testing?	No	No	Yes

Figure 3.7 – eBay’s publicly communicated API maturity levels to set customer expectations

Links

- Beta API documentation is provided in a dedicated location here:

<https://docs.microsoft.com/en-us/graph/api/overview?view=graph-rest-beta&preserve-view=true>

- Microsoft 365 Developer Platform Ideas forum:

<https://techcommunity.microsoft.com/t5/microsoft-365-developer-platform/db-p/Microsoft365DeveloperPlatform/label-name/Microsoft%20Graph>

Chapter 4

Figures

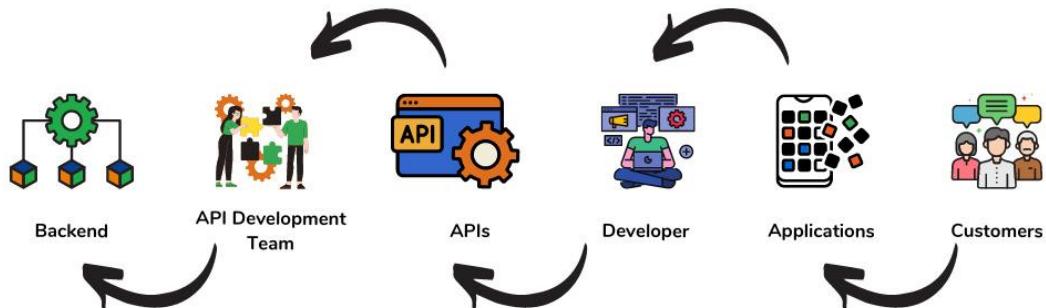


Figure 4.1 – APIs in the digital value chain

As a {user persona}
I want to {desired goal}
so that I can {benefit}.

Figure 4.2 – User story format

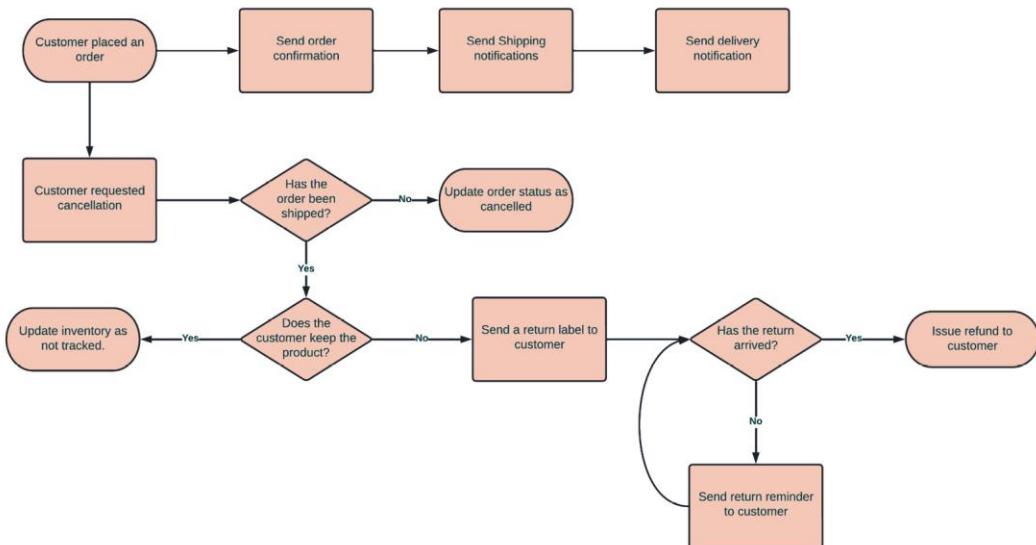


Figure 4.3 – Order processing workflow showing order notification scenarios

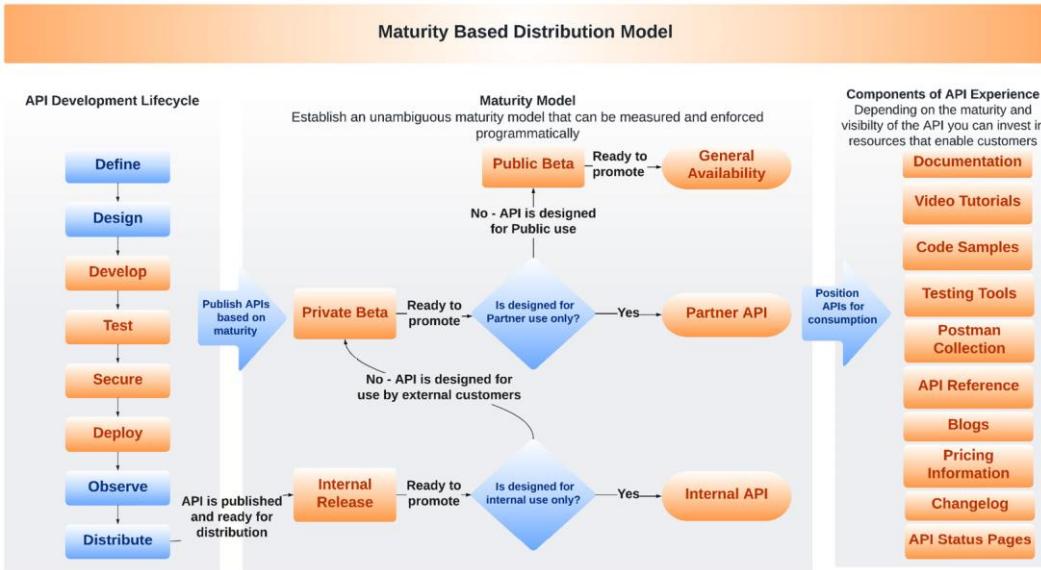


Figure 4.4 – Maturity-based distribution model for API products

Chapter 5

Figures

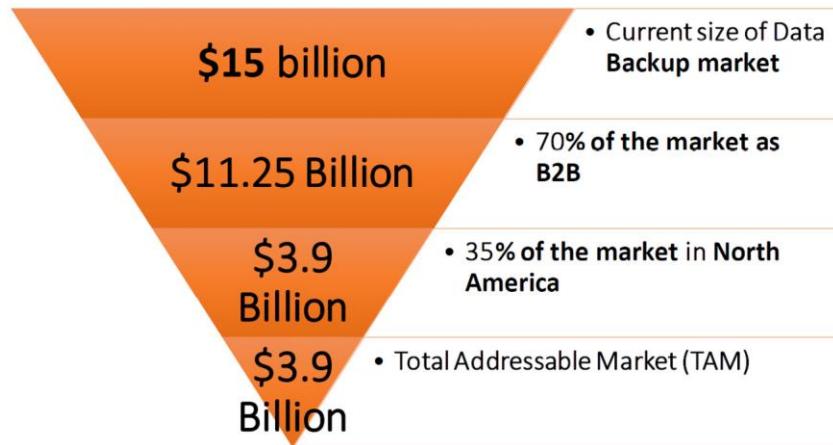


Figure 5.1 – A top-down TAM calculation example for the data backup market



Figure 5.2 – An example of a bottom-up TAM calculation for a B2B SaaS product

Chapter 6

Figures

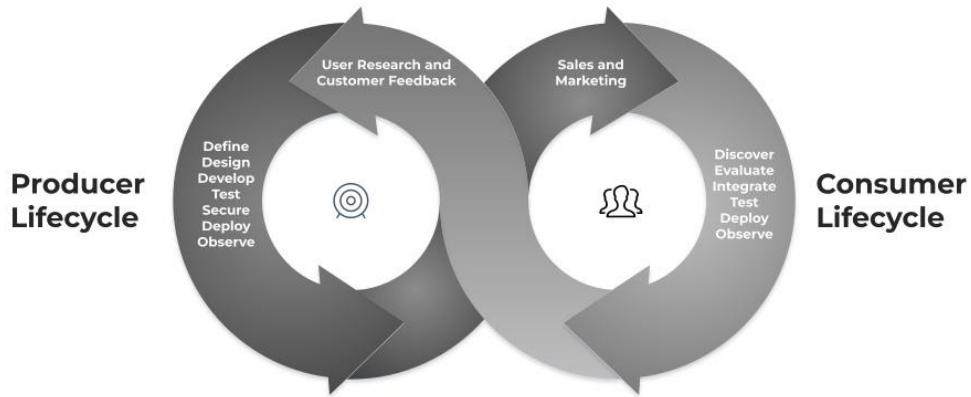


Figure 6.1 – Producer and consumer life cycle

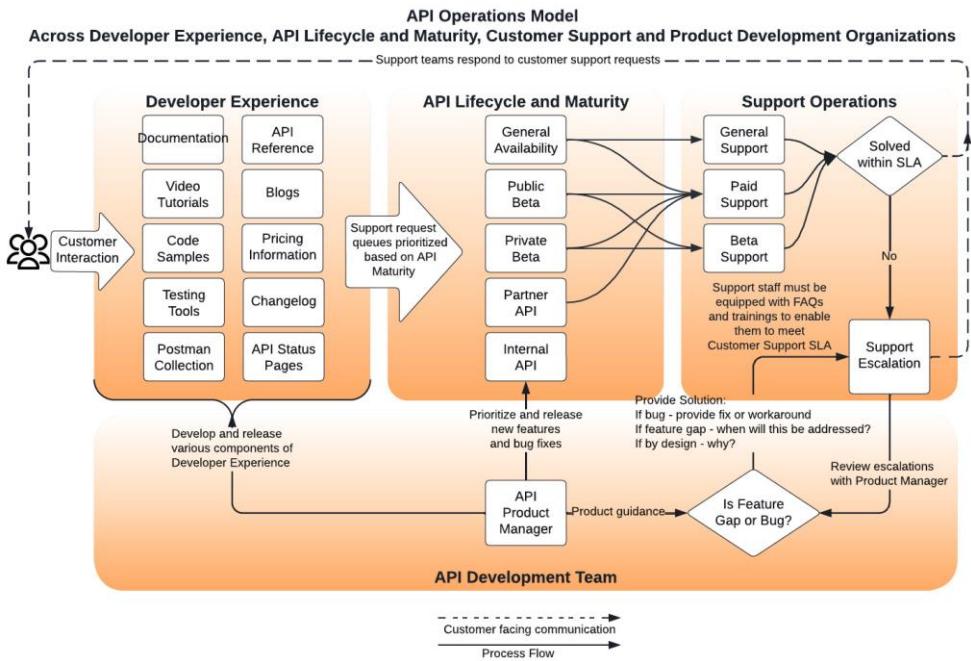


Figure 6.2 – Maturity-based support flow for large-scale API products

Formulas

$$\left[\frac{\text{Number of positive responses}}{\text{Number of total responses}} \right] \times 100 = \text{CSAT}$$

Formula 6.1 – CSAT

$$\left[\frac{\text{Sum of First response times}}{\text{Number of tickets}} \right] = \text{Average First Response Time}$$

Formula 6.2 – Average first response time

$$\left[\frac{\text{Total time to solve all tickets}}{\text{number of tickets solved}} \right] = \text{Average Time to Solve Tickets}$$

Formua 6.3 – Average time to solve a problem

Chapter 7

Figures

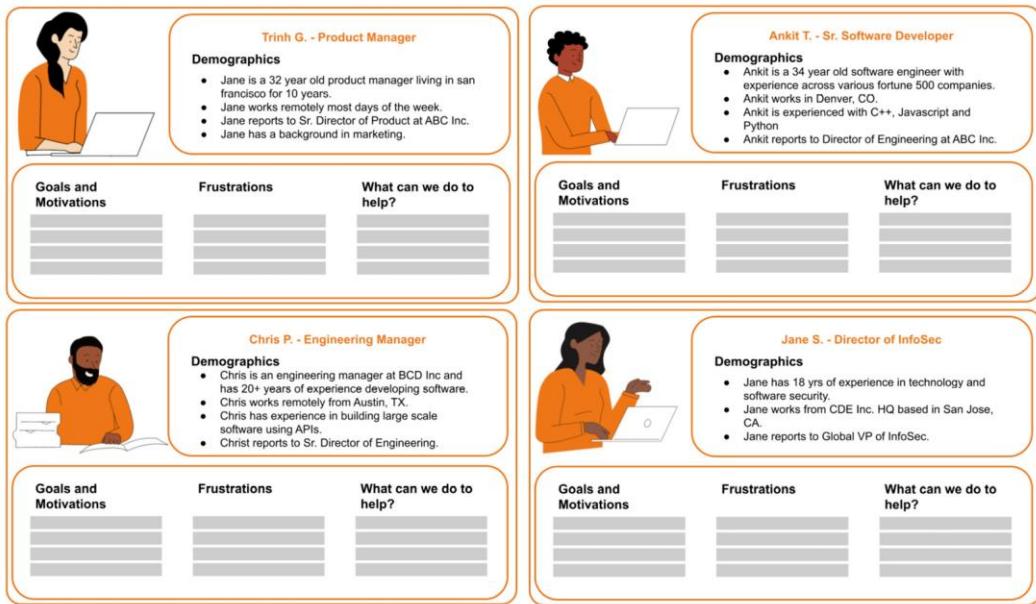


Figure 7.1 – Examples of user personas

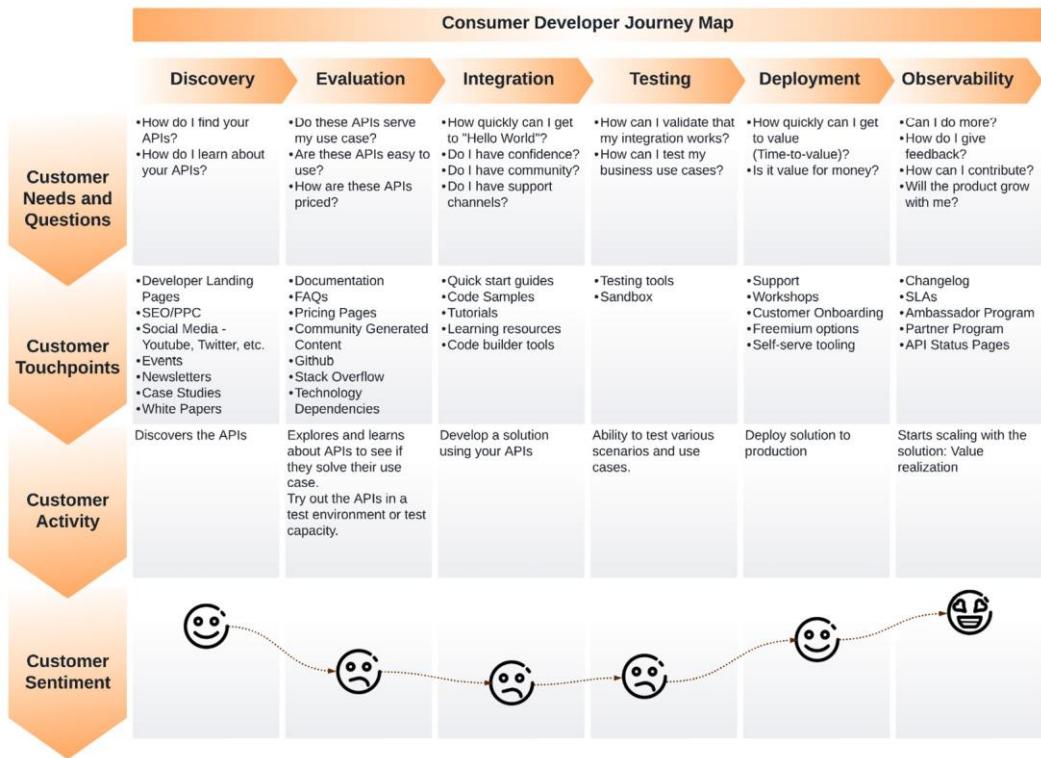


Figure 7.2 - An API customer's user journey map

Chapter 8

Figures



Figure 8.1 – User empathy map template

Tables

Says	Thinks	Does	Feels	Goals
"I need a fast and secure payment API that can handle a high volume of transactions."	"I'm worried about the security of my transactions and whether the API can handle the volume of transactions that I need."	Research different payment APIs and compare their features, pricing, and customer reviews.	Anxious, stressed, and uncertain about the security of the transactions.	To find a fast, secure, and reliable payment API that can handle a large volume of transactions and meet business needs.
"I want an easy-to-use API that is well documented and has a user-friendly interface."	"I want to be able to easily integrate the API with my existing systems and platforms."	Look for documentation, tutorials, and customer support when evaluating different payment APIs.	Frustrated and time-pressured if the API is not easy to use and well documented	To find an API that is easy to use, well documented, and can easily be integrated with existing systems and platforms.
"I'm concerned about the cost of using the API and the return on investment."	"I want to make sure that using the API will provide a good	Research the pricing and costs of different payment APIs and compare them to the	It is uncertain whether the API will provide a good return on investment.	To find a payment API that is cost-effective and provides a good

	return on investment.”	potential return on investment.		return on investment.
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Table 8.1 – Empathy maps for a payment API

Chapter 9

Figures

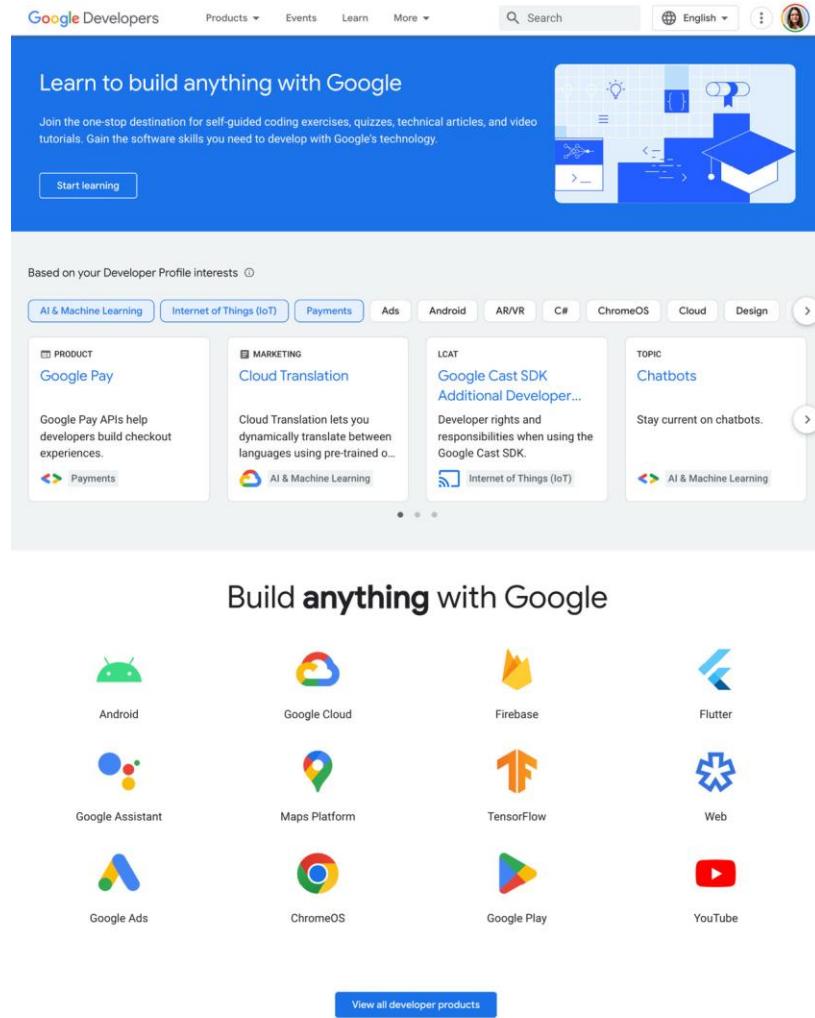


Figure 9.1 – Google developer portal landing page

Find a Google developer expert

Browse our directory of developer experts who have been recognized by Google for their depth of tech knowledge and skills.

[View all developer experts](#)



Chiziaruhoma Ogbonda
Lagos Nigeria
Expertise:
Dart, Flutter

[View Profile](#)



Sam Edwards
Richmond, VA United States
Expertise:
Android, Kotlin

[View Profile](#)



Raúl Jiménez
Barcelona Spain
Expertise:
Angular

[View Profile](#)



Jonathan Campos
Dallas, TX United States
Expertise:
Google Cloud Platform

[View Profile](#)

Figure 9.2 – Google developer expert directory showcased on Google’s developer portal

Google Cloud

My First Project ▾ Search (/) for resources, docs, products and more [Search](#)

API APIs and services [ENABLE APIs AND SERVICES](#)

Enabled APIs and services

- Library
- Credentials
- OAuth consent screen
- Page usage agreements

API & Services

Traffic Errors

1 hour 6 hours 12 hours 1 day 2 days 4 days 7 days 14 days 30 days

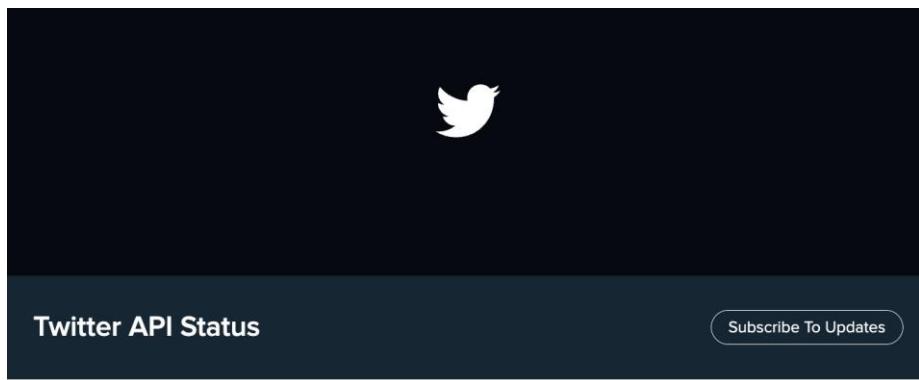
Traffic		Errors	
No data is available for the selected time frame.	1.0/s	No data is available for the selected time frame.	100%
	0.8/s		80%
	0.6/s		60%
	0.4/s		40%
	0.2/s		20%
	0		0
Tue 17	6:00 12:00 18:00	Tue 17	6:00 12:00 18:00

Median latency

1.0
0.8
0.6
0.4
0.2
0

Tue 17 6:00 12:00 18:00

Figure 9.3 – Google Cloud API console logged-in experience showing all the tools and product offerings



All Systems Operational			
Enterprise Volume Streams & PowerTr... ?	✓	Enterprise and Premium Historical APIs ?	✓
Enterprise and Premium Account Activ... ?	✓	Enterprise Engagement API ?	✓
Enterprise Usage API ?	✓	Ads API ?	✓
Standard endpoints ?	✓	Standard statuses/update endpoints	✓
Media endpoints ?	✓	v2 streaming Tweets endpoints	✓
v2 RESTful Tweets endpoints	✓	v2 RESTful users endpoints	✓
Premium billing ?	✓	Twitter Developer Labs ?	✓
Enterprise Console ?	✓	Developer Portal ?	✓
v2 RESTful Spaces endpoints	✓		

✓ Operational ▬ Degraded Performance ⚠ Partial Outage ✖ Major Outage 🔧 Maintenance

Figure 9.4 – Twitter’s API status page showing the operational status of all systems

Meta for Developers

Docs Tools Support Search developer documentation Log In

Messenger Platform

- Overview
- Try It
- Webhooks
- Handover Protocol
- Discovery & Engagement
- Messaging
 - Instagram Messaging
 - Conversations API
- Webview
- IDs & Profile
- Natural Language Processing
- Analytics & Feedback
- Submission Process
- Policy & Usage Guidelines
- Reference
- General Best Practices
- Error Codes
- Support Resources
- FAQ
- [Changelog](#)

On This Page

Messenger Platform Changelog

The Messenger Platform follows Graph API Versioning.

Related Changelogs

- Graph API Changelog ↗
- Instagram Graph API Changelog ↗
- Marketing API Changelog ↗

January 2, 2023

Messenger Platform Insights

Beginning March, 31, 2023, you will no longer be able to download a CVS file from the Messenger Analytics dashboard. Visit the Messaging Insights API to learn how to get these insights.

November 9, 2022

Business Login for Instagram

Business Login for Instagram makes it easier for you to onboard Instagram users who still need to configure their account for API access through modal pop ups and fewer steps.

Improvements between Click to Messenger, Lead Gen ads and Messenger Platform

We've made following up on Lead Gen ads that Click to Messenger easier through:

- A new Referral Webhook for Click to Messenger, Lead Gen ads that include the lead information.
- Improvements to the Handover Protocol. Advertisers can now select which app they want to route completed leads. Additionally, for apps that haven't yet implemented these app notifications, an optional summary message can be enabled, to send lead information to that app in the form of a regular message.
- Since referral or summary events are triggered while the standard messaging window is open, apps can use this to follow-up with leads directly in Messenger, upsell them to Recurring Notifications or have them book an appointment or call the business directly.

Messaging Events API

Messaging Events API supports the `lead_submitted` event. Businesses can use this event to report lead submissions from Click to Messenger ads. This new messaging event is released as an Open Beta. Reporting in Ads Manager will come soon.

Figure 9.5 – Messenger Platform changelog

PayPal Developer

Business Dashboard Help Deepa

Search

Docs APIs & SDKs Tools Support

DASHBOARD

My Apps & Credentials

SANDBOX

Accounts

Notifications

API Calls

IPN Simulator

Webhooks Events

MOCK

Webhooks Simulator

Credit Card Generator

Negative Testing

LIVE

API Calls

Webhooks Events

Sandbox test accounts

Test your application and mimic live transactions using sandbox test accounts.

- Default personal and business accounts have been created for you.
- Create and manage more sandbox accounts as needed.

To link other accounts created in sandbox to your developer account, [authenticate](#) with the credentials of the test account you want to link

Developers outside of the US should read our [international developer questions](#).

See also: the [Sandbox Testing Guide](#).

Sandbox Accounts:

Total Accounts: 5

<input type="checkbox"/> Account name	Type	Country	Date created	Manage accounts
<input type="checkbox"/> sb-im43xp14714015@business.exam...	Business	CR	19 Apr 2022	...
<input type="checkbox"/> sb-4ld7s8312332@personal.example....	Personal	US	26 Oct 2021	...
<input type="checkbox"/> sb-1a43kk8312320@personal.example...	Personal	US	26 Oct 2021	...
<input type="checkbox"/> sb-yemq68137723@business.example...	Business	US	14 Oct 2021	...

[Create bulk accounts](#) [Create account](#)

Figure 9.6 – Sandbox accounts view in the PayPal developer portal

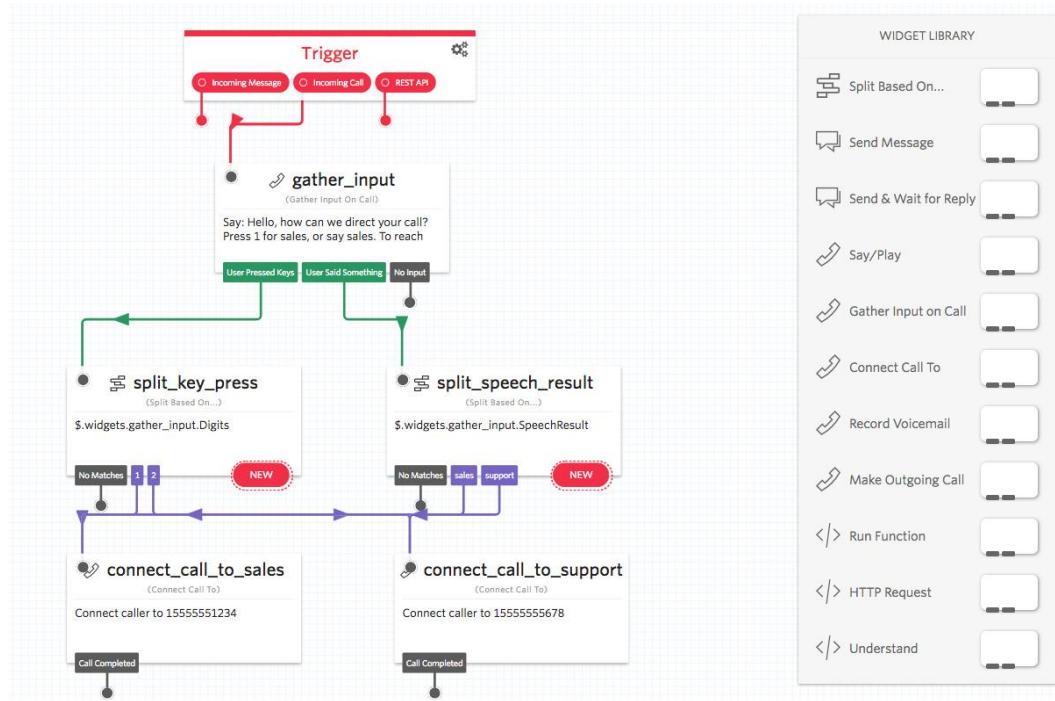


Figure 9.7 – Twilio Studio’s drag-and-drop interface to work with APIs

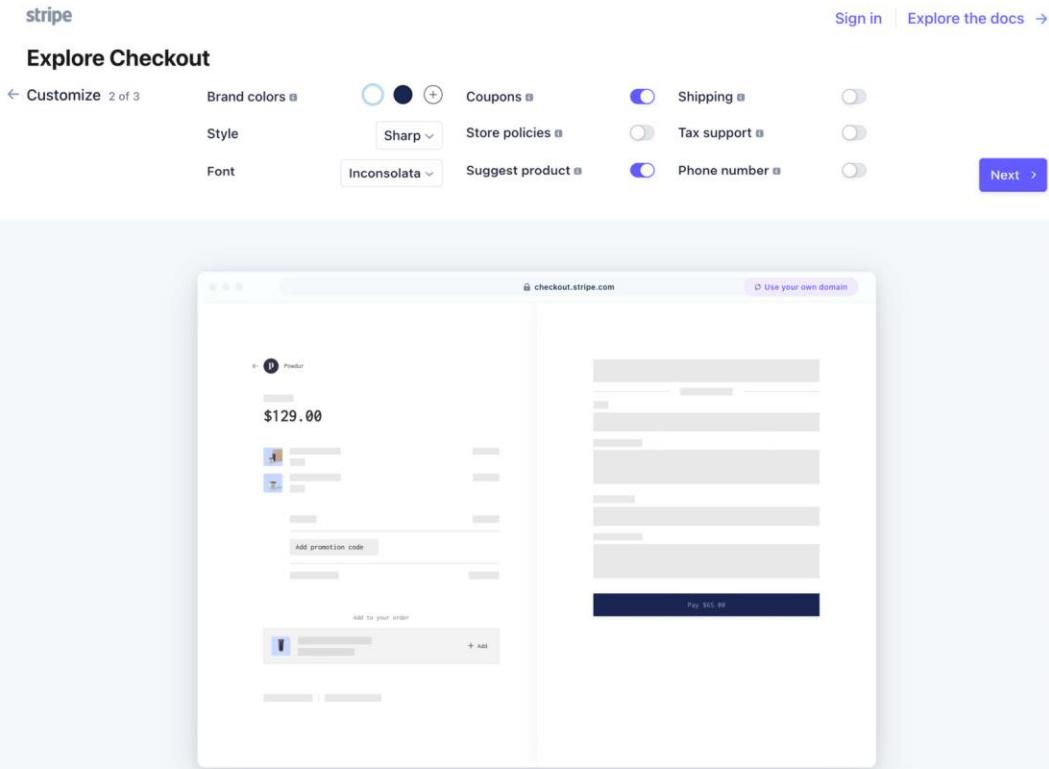


Figure 9.8 – Stripe’s Checkout click-through builder (page 1)

stripe

[Sign in](#) | [Explore the docs →](#)

Explore Checkout

← Try it out 3 of 3

Wallet Customer location United States

The screenshot shows a payment interface for a skincare order from 'Powdur'. The total amount is US\$129.00. The order details include:

- The Premium Pure Set**: Qty 1, Skin care products, US\$65.00
- Pure glow cream**: Qty 2, US\$32.00 each, Total US\$64.00
- Subtotal**: US\$129.00

Below the order summary, there is a link to "Add promotion code". The "Total due" is also listed as US\$129.00.

On the right side of the interface, there is a payment form:

- Email**: Input field.
- Card information**: Input fields for card number (1234 1234 1234 1234), expiration (MM / YY), and CVC.
- Name on card**: Input field.
- Country or region**: Dropdown menu set to "United States".
- ZIP**: Input field.

A large "Pay" button is prominently displayed at the bottom right of the form.

At the bottom left, there is a note: "Powered by stripe" followed by links to "Terms" and "Privacy". At the bottom center, there are two buttons: "TEST COUPONS" and "TEST CARDS".

Figure 9.9 – Stripe’s Checkout click-through builder (page 2)

Chapter 10

Figures

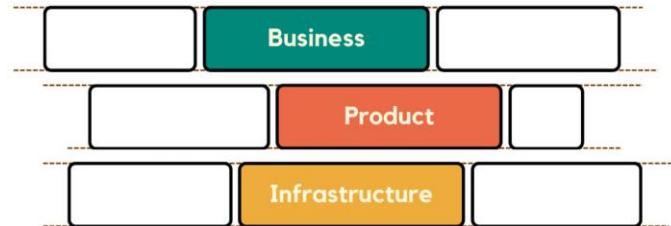


Figure 10.1 – Infrastructure as the foundational building block for API analytics, which enables product metrics and business metrics to be built on top of it

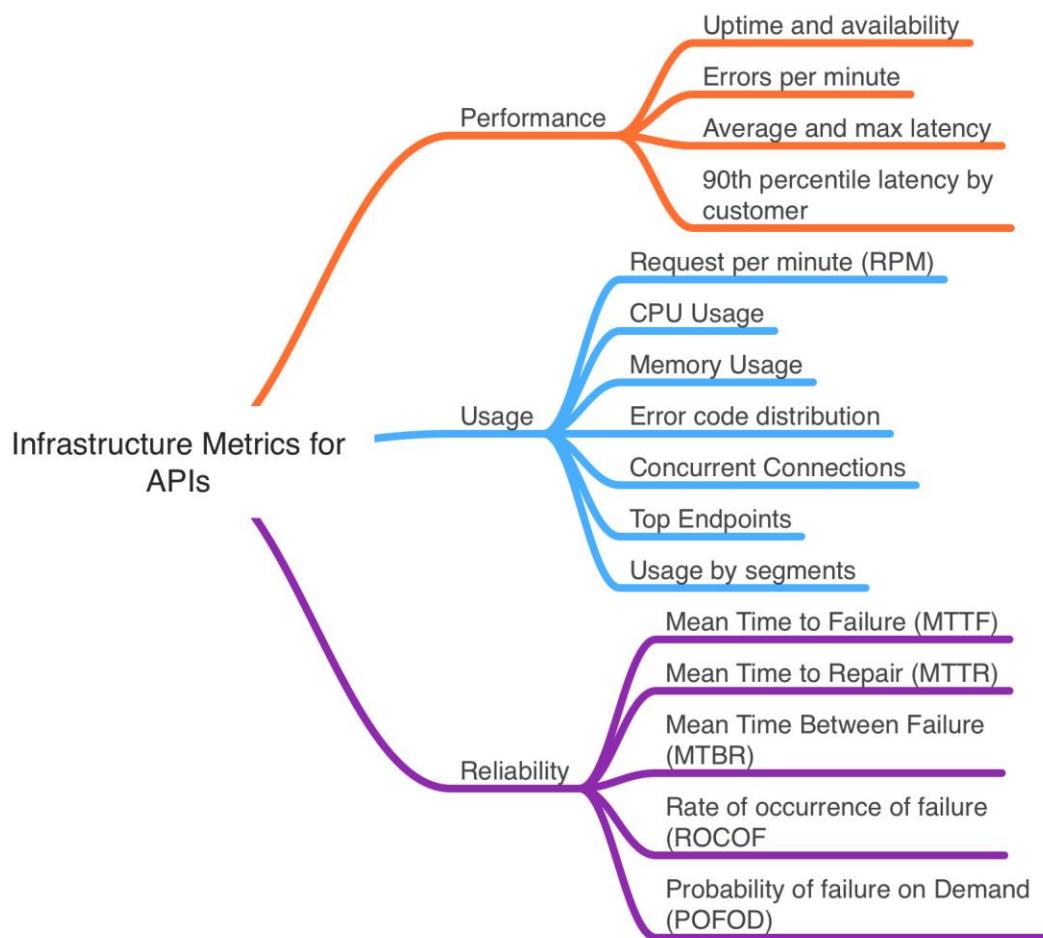


Figure 10.2 – Infrastructure metrics across performance, usage, and reliability

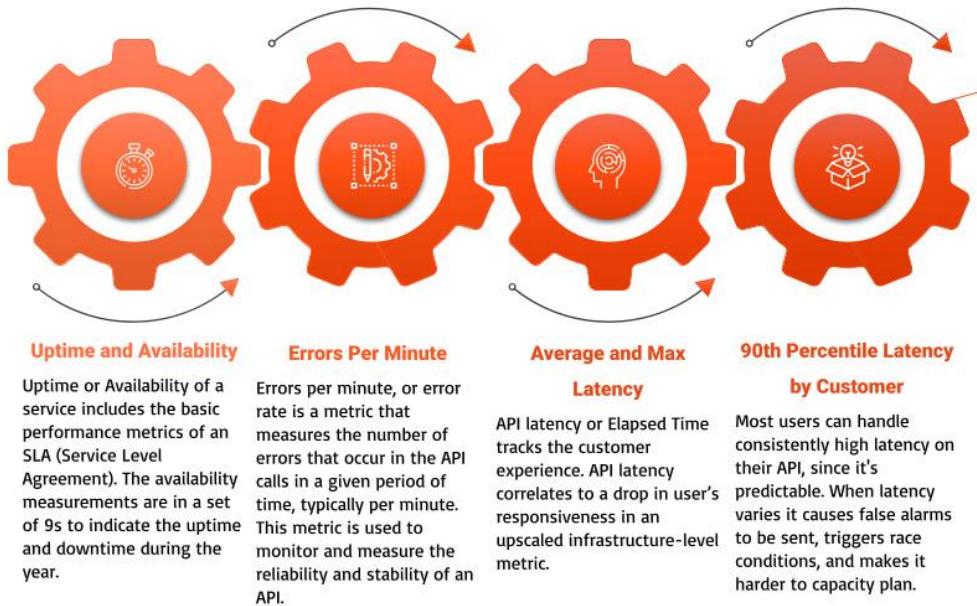


Figure 10.3 – Infrastructure metrics to measure the performance of APIs

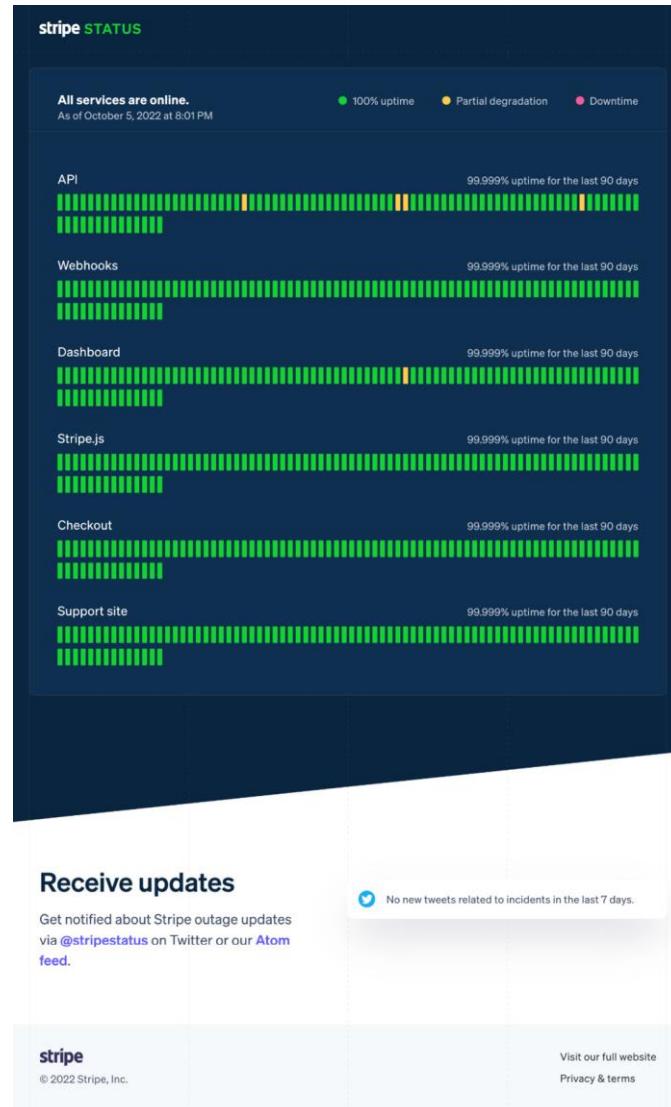


Figure 10.4 – Stripe API status page displaying uptime metrics over a 90-day period

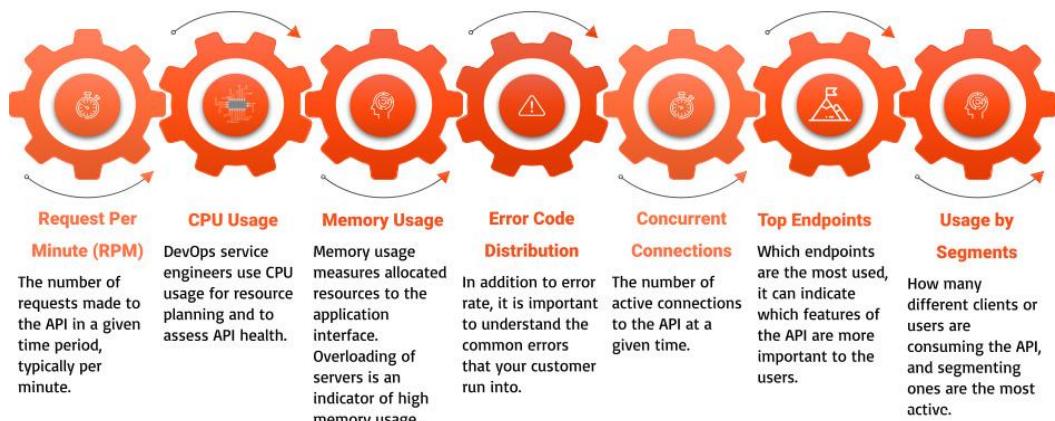


Figure 10.5 – Key API infrastructure usage metrics

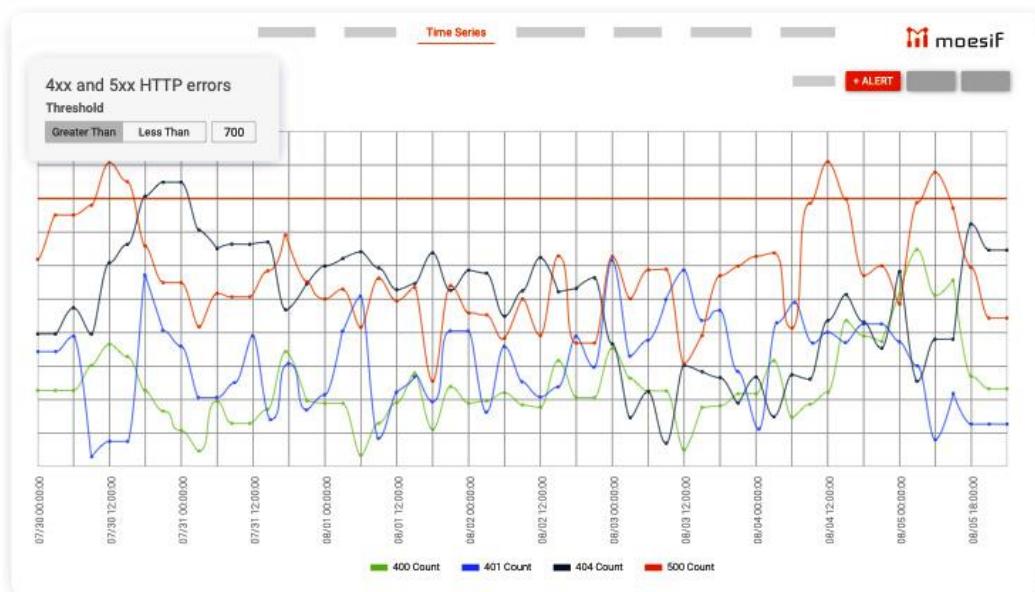


Figure 10.6 – Moesif dashboard showing the frequency of occurrence of 4xx and 5xx error codes

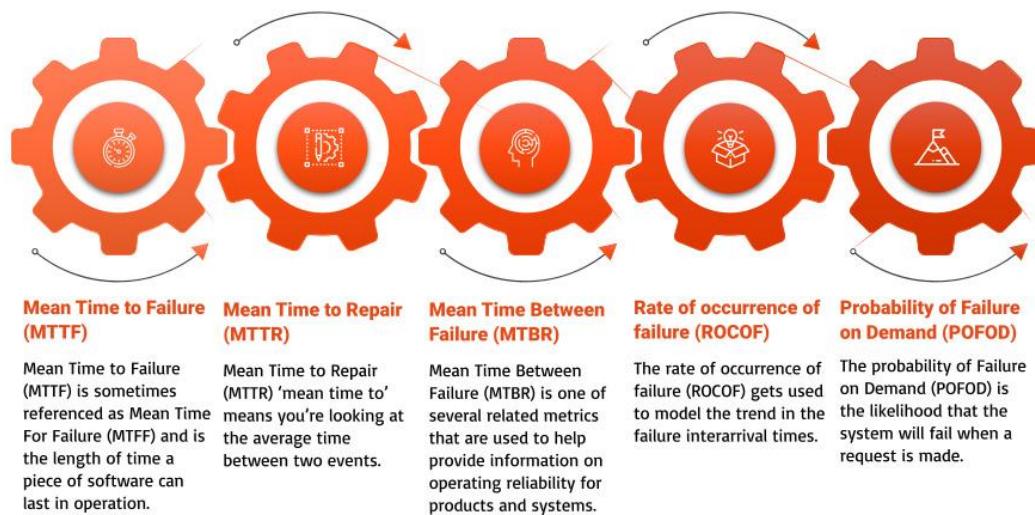


Figure 10.7 – Key API infrastructure reliability metrics

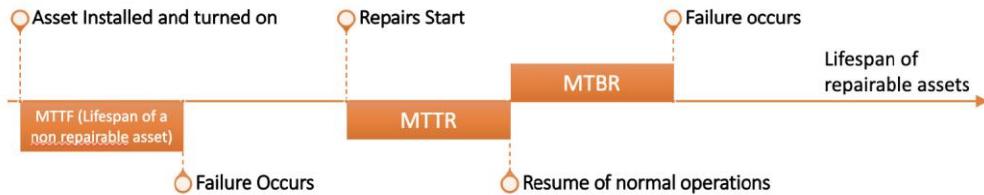


Figure 10.8 – Relationship between MTTF, MTTR, and MTBR

Formulas

$$\left[\frac{\text{Total hours of Operations}}{\text{Total number of Units}} \right] = \text{Mean Time Failure (MTTF)}$$

Formula 10.1 – MTTF

$$\left[\frac{\text{Total maintenance time}}{\text{Total number of repairs}} \right] = \text{Mean Time Repair (MTTR)}$$

Formula 10.2 – MTTR

$$\left[\frac{\text{Total operational uptime between failures}}{\text{Number of failures}} \right] = \text{Mean time between failure (MTBR)}$$

Formula 10.3 – MTBR

Chapter 11

Figures

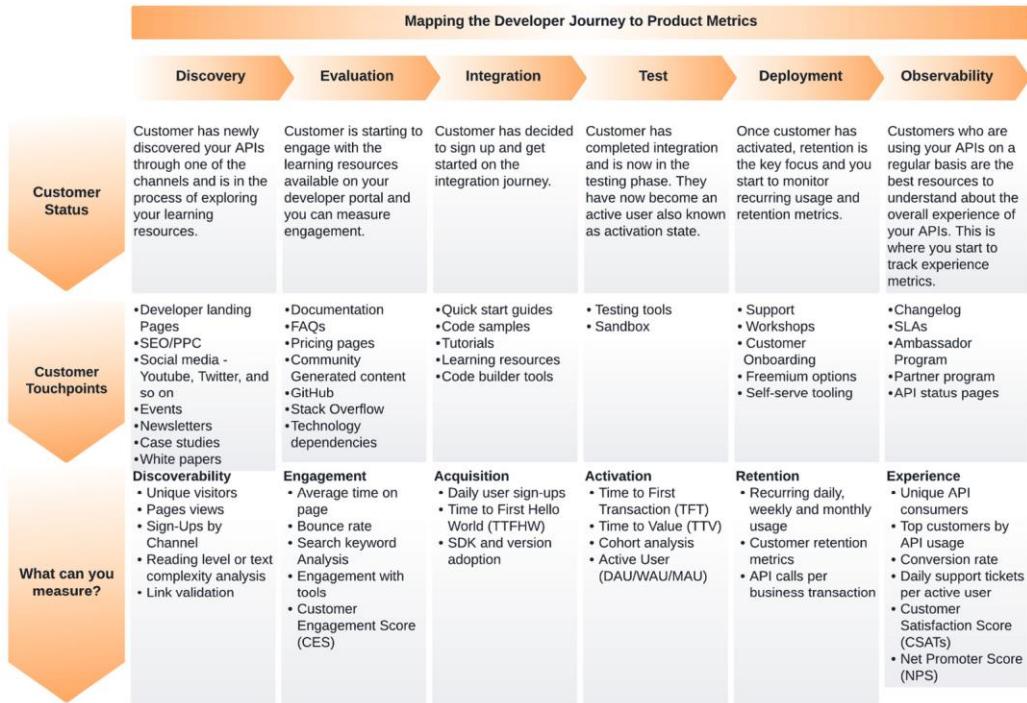


Figure 11.1 – Product metrics interpreted from the developer journey

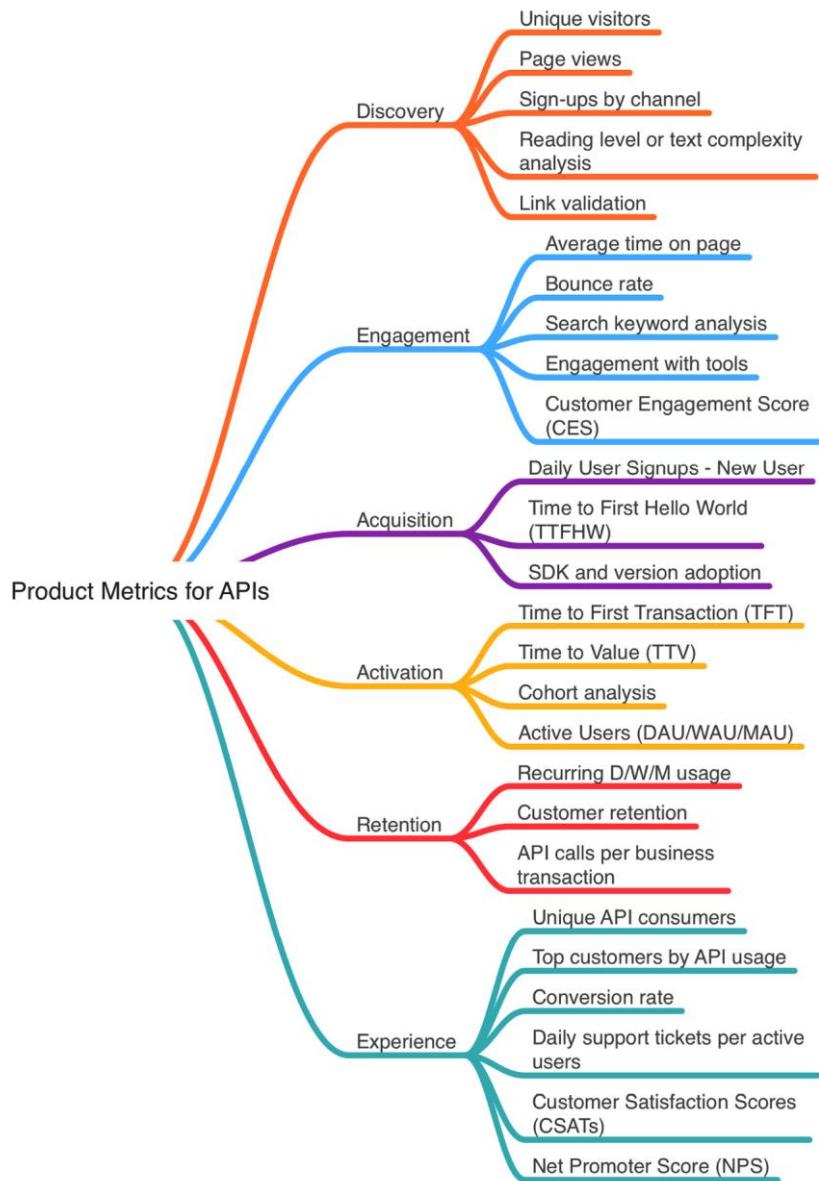


Figure 11.2 – Product metrics across discovery, engagement, acquisition, activation, retention, and experience

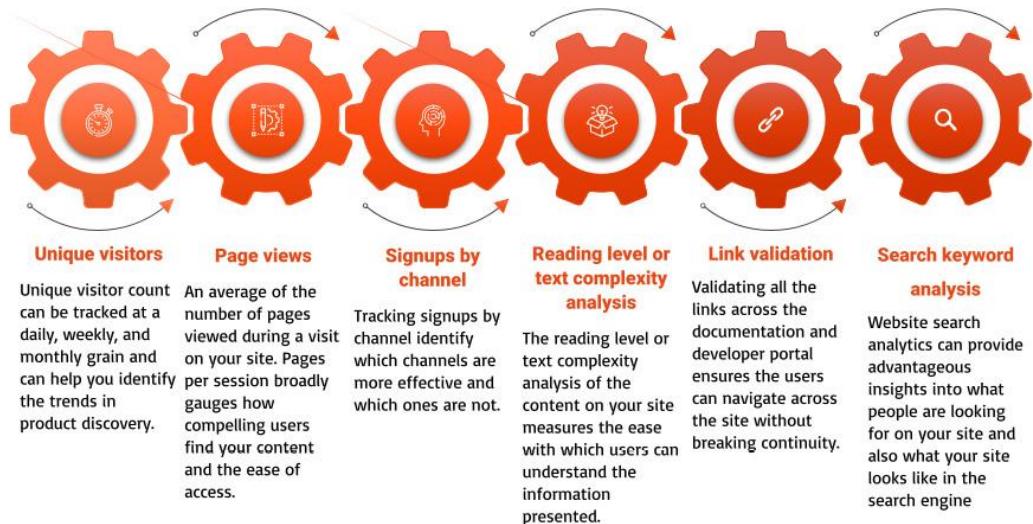


Figure 11.3 – Product metrics to measure the discoverability of your APIs

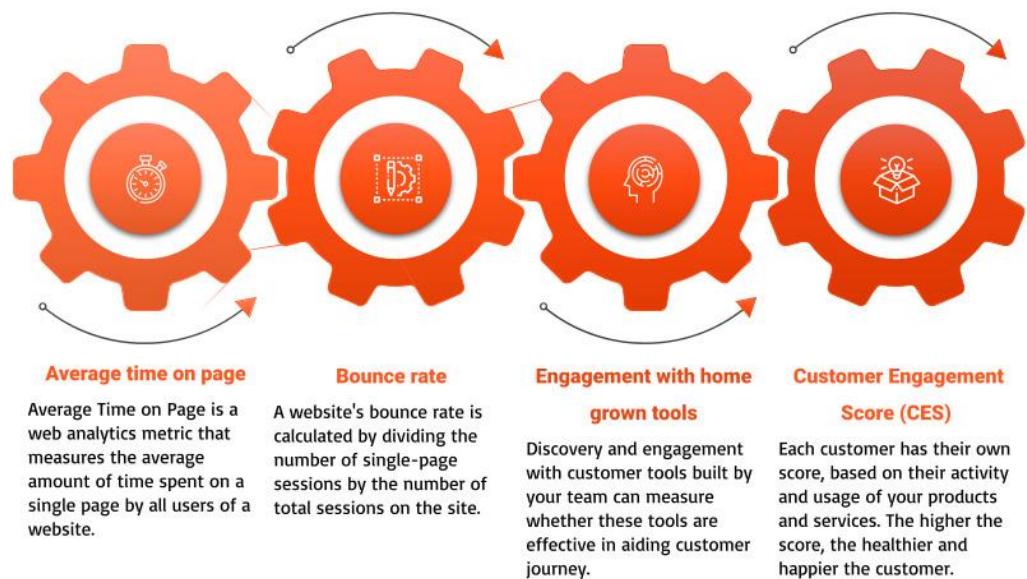


Figure 11.4 – Product metrics to measure customer engagement

Credit card generator for testing

Generate random credit cards for testing purposes. You can add credit cards to a Sandbox PayPal account or use them for credit card payments.

Generate credit card

Card Type: Visa

Country or region: United States of America

Generate credit card

Generated Credit Card Details

Card Type: Visa
Card Number: 4032037986455943
Expiration Date: 09/2023
CVV: 760

Figure 11.5 – PayPal's credit card generator for testing, available on PayPal's developer dashboard

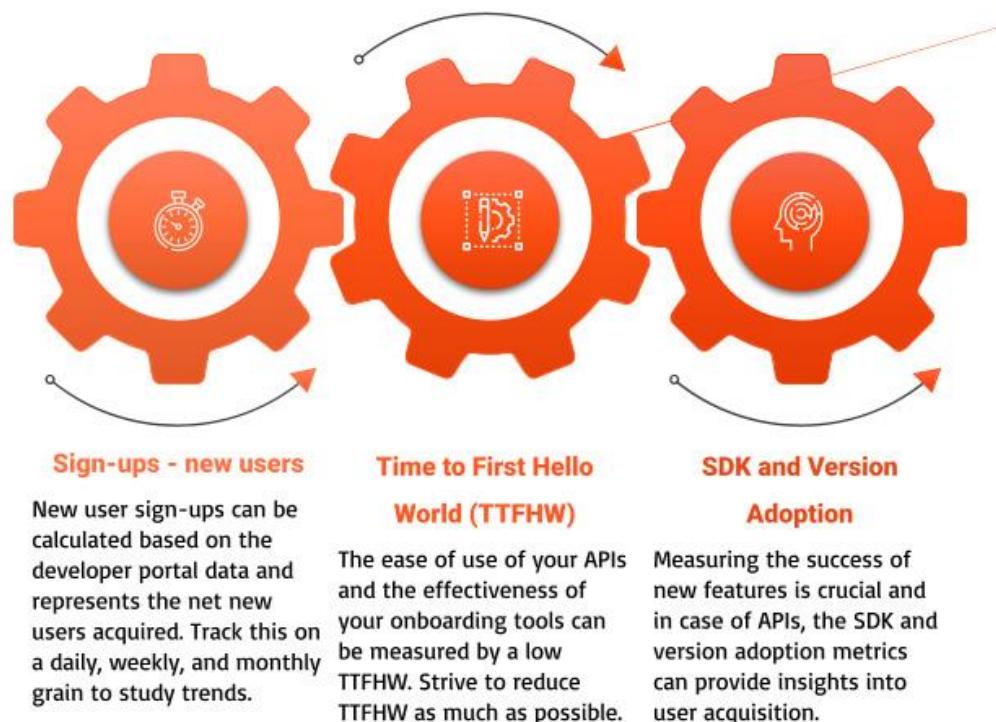


Figure 11.6 – Product metrics for measuring acquisition

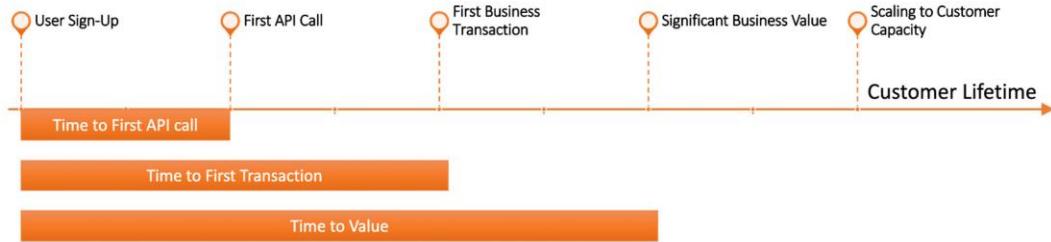


Figure 11.7 – The user acquisition and activation journey starts at sign-up and goes through the first API call, business transaction, and customer lifetime value

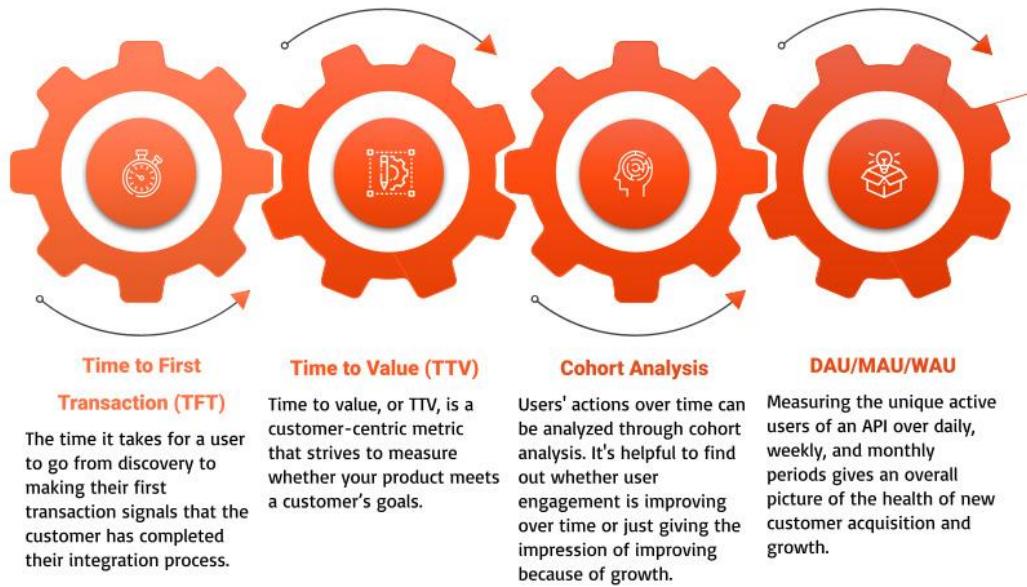


Figure 11.8 – Product metrics to measure activation

App launched	% Active users after app launch												
	Cohort	Users	Day 0	Day 1	Day 2	Day 3	Day 4	Day 5	Day 6	Day 7	Day 8	Day 9	Day 10
January 25		1100	1100	27.50%	26.40%	19.80%	18.70%	17.60%	15.40%	15.40%	13.20%	14.30%	13.20%
January 26		984	984	25.58%	19.68%	16.73%	16.73%	15.74%	13.78%	14.76%	11.81%	12.79%	
January 27		678	678	23.05%	16.27%	12.20%	10.85%	10.85%	10.17%	9.49%	9.49%		
January 28		535	535	16.59%	12.84%	9.63%	9.10%	8.03%	8.03%	7.49%			
January 29		1010	1010	28.28%	18.18%	16.16%	16.16%	16.16%	15.15%				
January 30		908	908	24.52%	21.79%	16.34%	14.53%	13.62%					
January 31		1191	1191	41.69%	23.82%	19.06%	19.06%						
February 1		621	621	19.25%	15.53%	0.09936							
February 2		630	630	21.42%	14.49%								
February 3		922	922	32.27%									
All users		8579	100	26.01%	18.78%	14.98%	15.02%	13.67%	12.50%	11.79%	11.50%	13.55%	13.20%

Figure 11.9 – Cohort analysis showing active user behavior over user acquisition cohorts

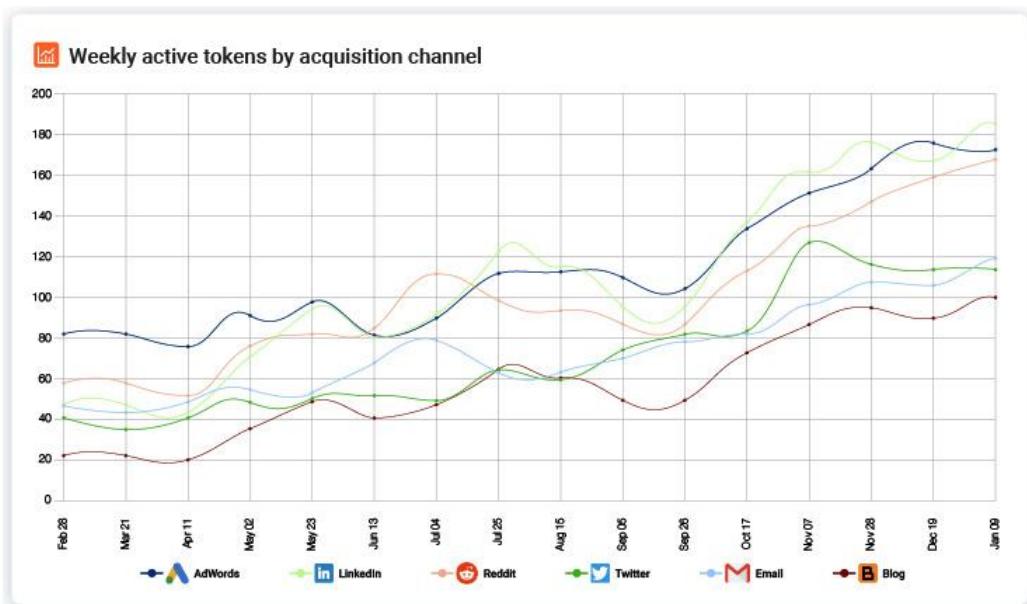


Figure 11.10 – Moesif's dashboard for weekly active tokens by acquisition channel

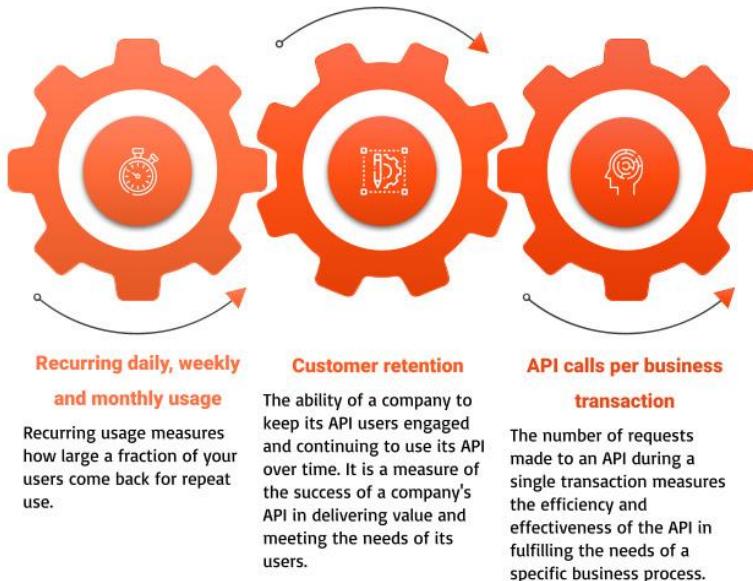


Figure 11.11 – Product metrics for retention

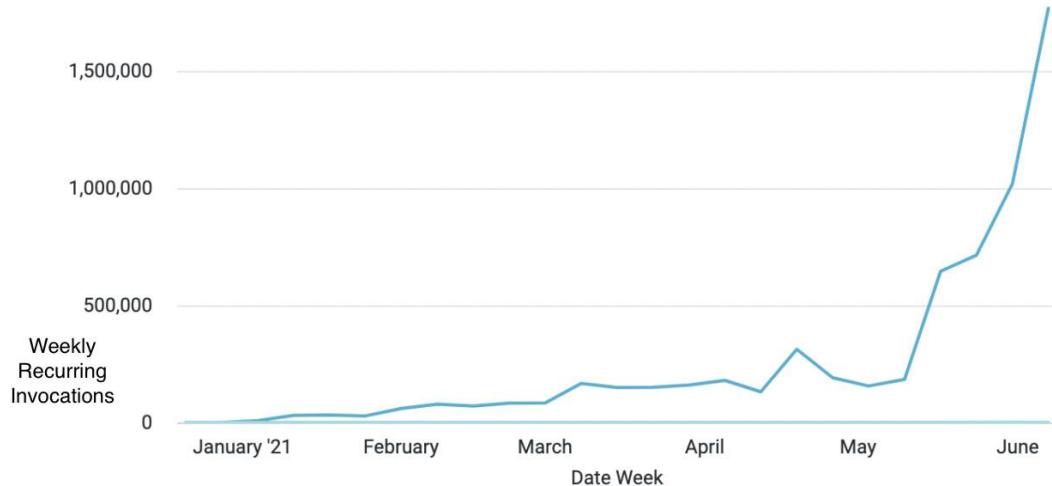


Figure 11.12 – Weekly API usage of a sample consumer over a 6-month period

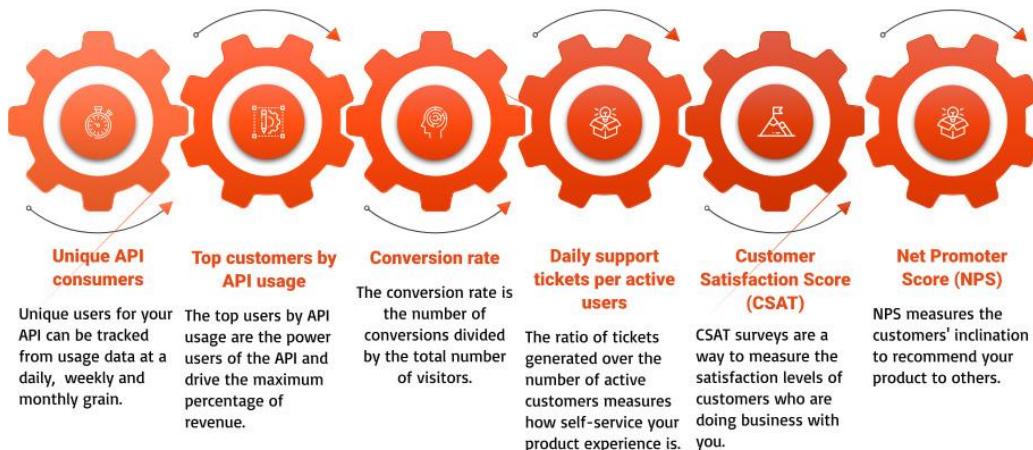


Figure 11.13 – Product metrics to measure experience

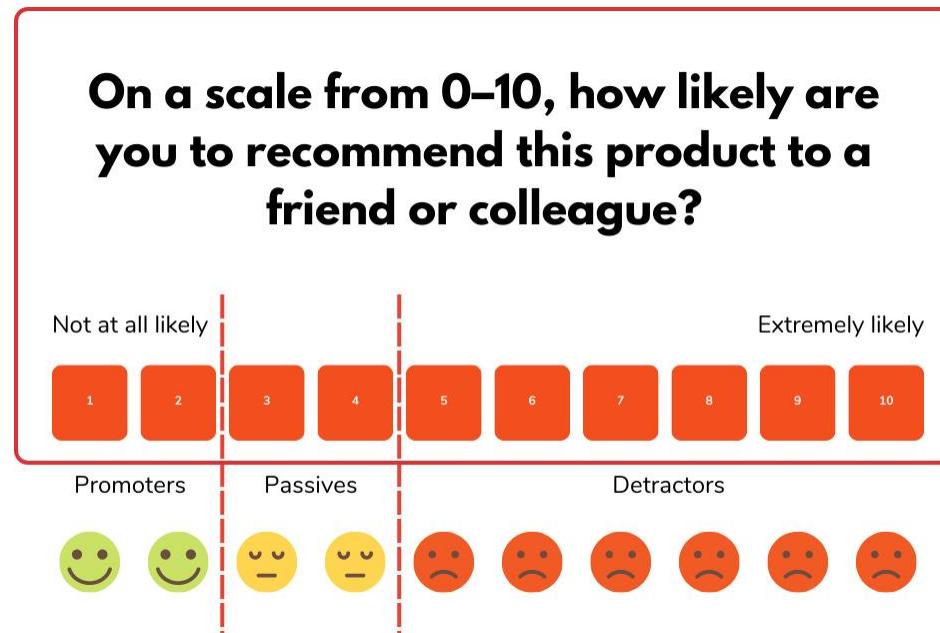


Figure 11.14 – The form fields of an NPS survey mapped to promoters, passives, and detractors

Formulas

$$\left[\frac{\text{Sum}(\text{Time Spent on Page})}{(\text{Count}(\text{Page Views}) - \text{Count}(\text{Page Exits}))} \right] = \text{Average Time on Page}$$

Formula 11.1 – Average time on page

*Customer Engagement Score = (w1 * n1) + (w2 * n2) + ... + (w# * n#)*

Formula 11.2 – CES

$$\left[\frac{\text{Number of users that "convert"}}{\text{Number of total audience}} \right] = \text{Conversion rate}$$

Formula 11.3 – Conversion rate

$$\left[\frac{\text{Support tickets created during a week}}{\text{Active user accounts during the week}} \right] \times 100 \\ = \text{Percentage of support tickets per active accounts}$$

Formula 11.4 – Support tickets per active accounts (in %)

$$\left[\frac{\text{The total number of 4 and 5 responses}}{\text{Number of total responses}} \times 100 \right] \\ = \text{Percentage of satisfied customers}$$

Formula 11.5 – Satisfied customers % (in %)

Percentage of Promoters – Percentage of Detractors = NPS

Formula 11.6 – NPS

Chapter 12

Figures

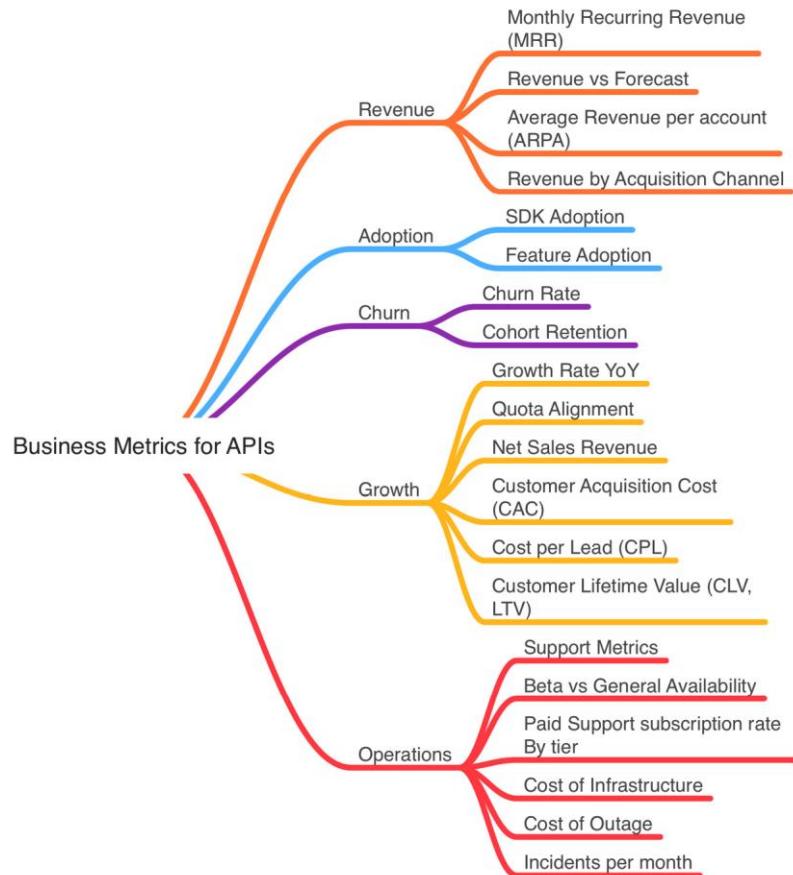


Figure 12.1 – Business metrics across revenue, adoption, churn, growth, and operations

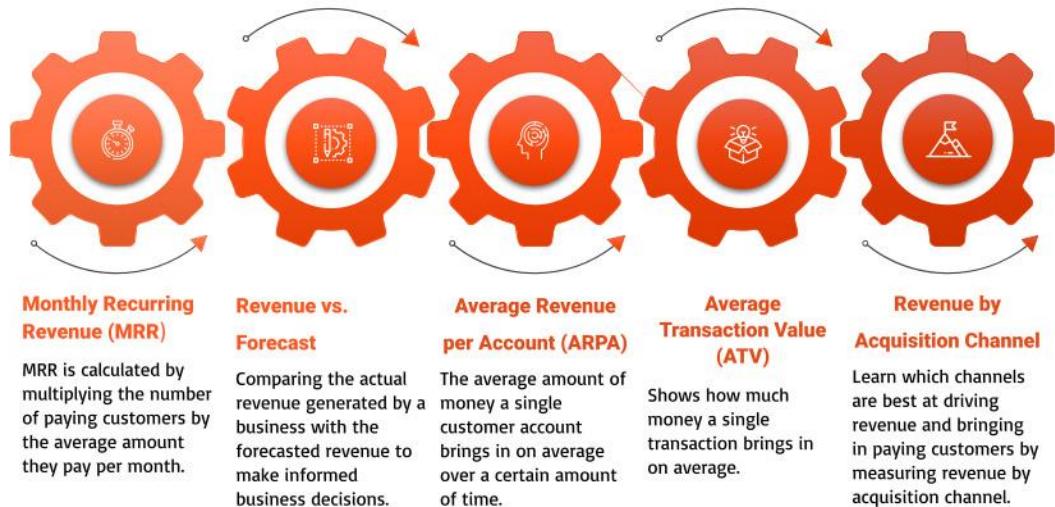


Figure 12.2 – Revenue metrics for APIs

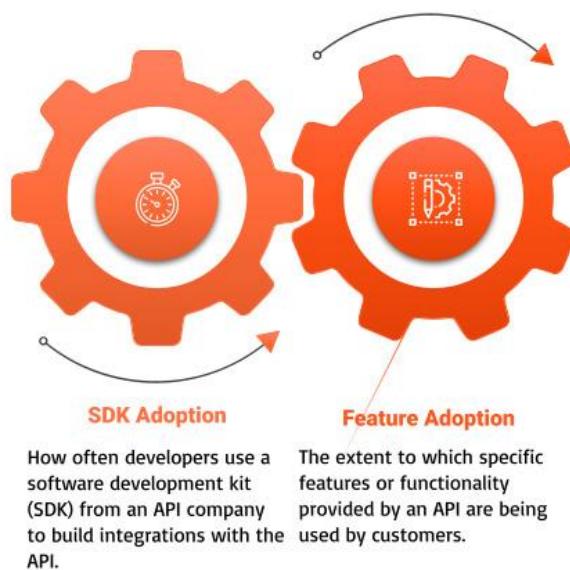
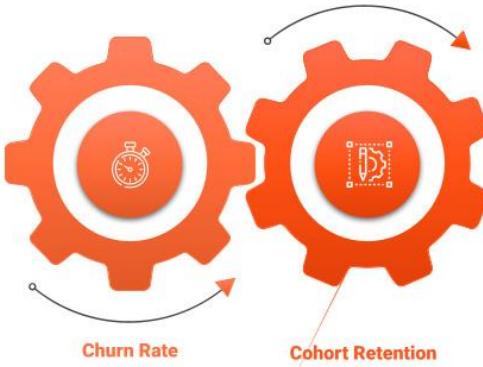


Figure 12.3 – Key adoption metrics for business stakeholders



Churn Rate
Percentage of customers who stop using a product or service over a specific period of time.

Cohort Retention
Cohort retention is a metric that measures how many of an API's users keep using it after a certain amount of time

Figure 12.4 – Churn and retention metrics for business stakeholders



Figure 12.5 – Growth metrics for APIs tracked by business stakeholders

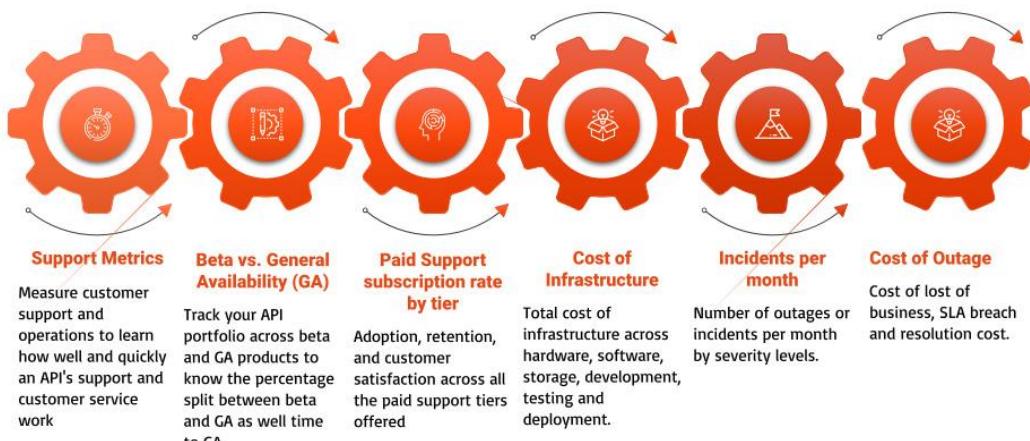


Figure 12.6 – Operations metrics for APIs

Formulas

$$\frac{\text{Total Revenue}}{\text{Number of Accounts}} = \text{Average Revenue per Account (ARPA)}$$

Formula 12.1 – ARPA

$$[\frac{\text{Number of customers who churned in a specific period of time}}{\text{Total number of customers at the beginning of that period}}] = \text{Churn Rate}$$

Formula 12.2 – Churn rate

$$[\frac{\text{Number of customers who continued usage in a specific period of time}}{\text{Total number of customers at the beginning of that period}}] = \text{Retention Rate}$$

Formula 12.3 – Retention Rate

$$[\frac{(\text{Current year value} - \text{Previous year value})}{\text{Previous year value}}] = \text{YoY Growth}$$

Formula 12.4 – YoY growth

(average value of a transaction) × (number of transactions per year) × (average customer lifespan) = Customer Lifetime Value (CLV/LTV)

Formula 12.5 – CLV or LTV

Chapter 13

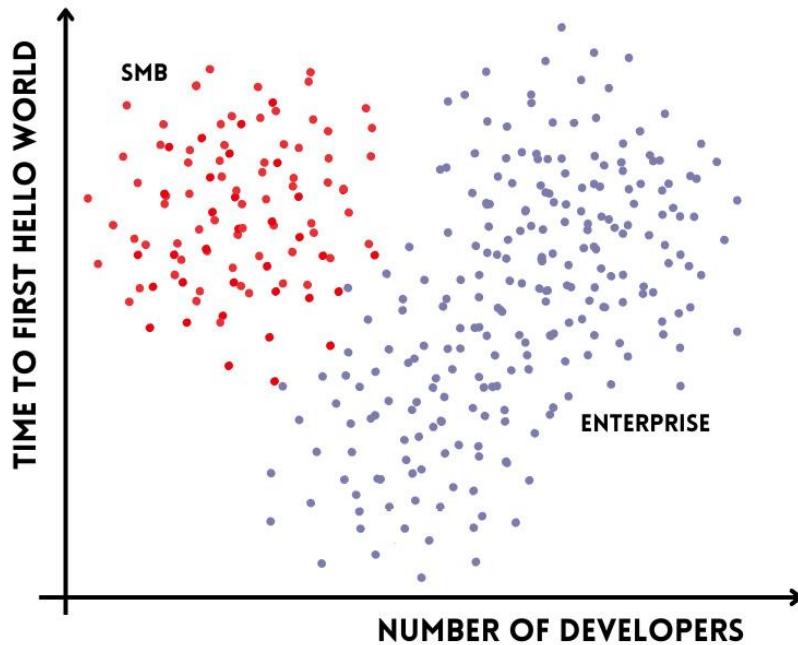


Figure 13.1 – Cluster analysis showing clusters of enterprise and SMB customers

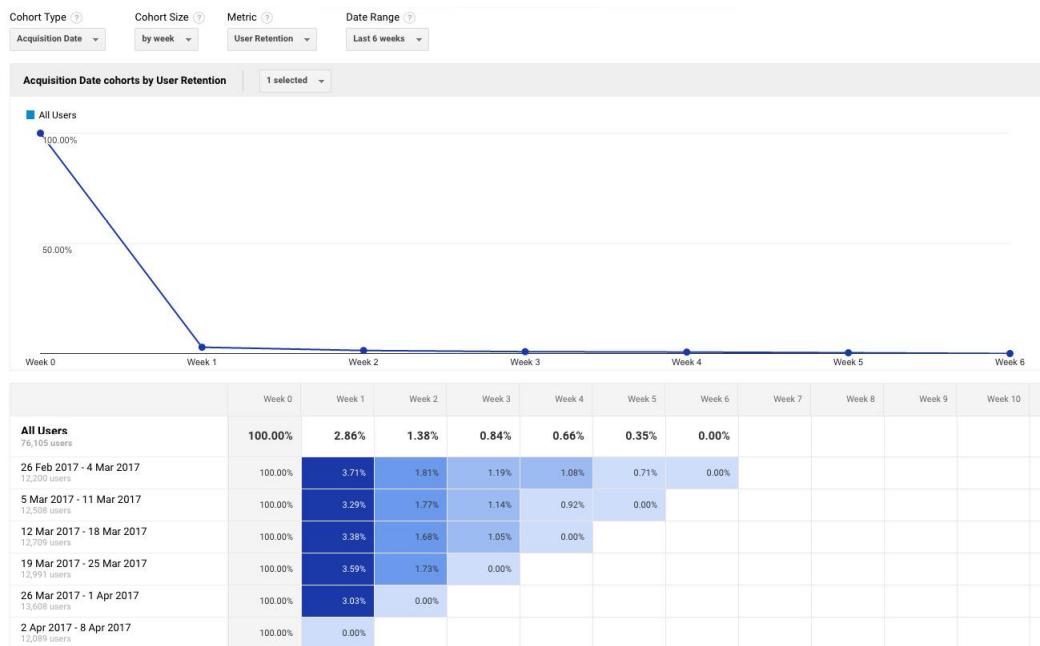


Figure 13.2 – Google Analytics cohort analysis report

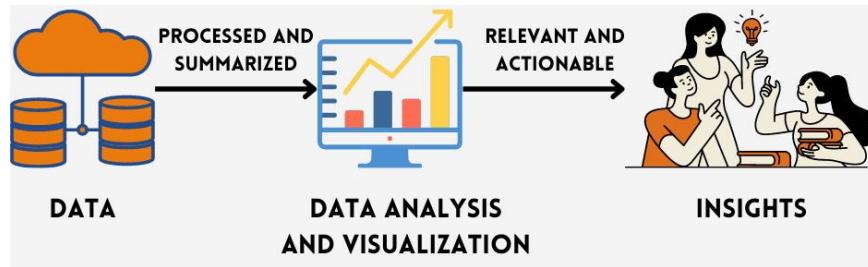


Figure 13.3 – The process of interpreting data to form insights

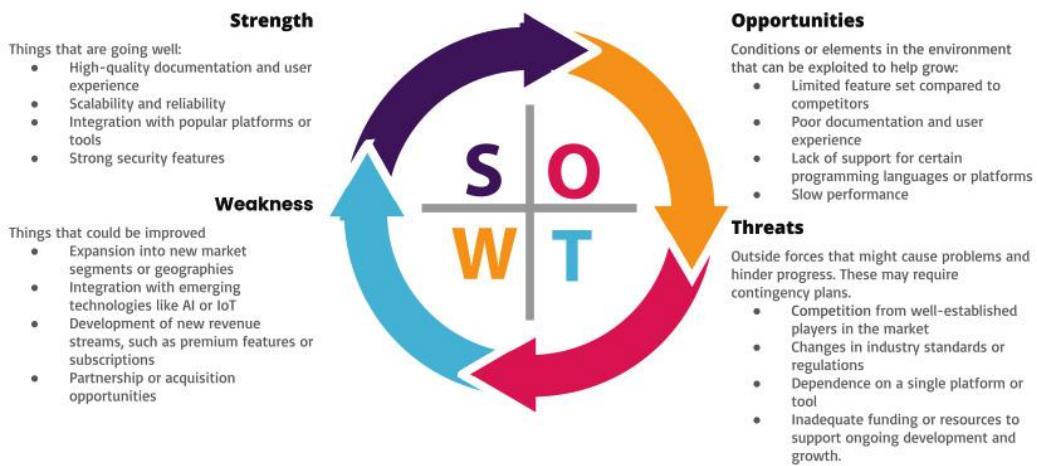


Figure 13.4 – Swot analysis matrix

Our objective is to [quantifiable goal] by [deadline].
[Team members] will achieve this aim by doing [actions to attain the goal].
Achieving this aim will benefit us [outcome or advantage].

Figure 13.5 – Smart framework format of writing goals

I will [objective] as measured by [Key Results].

Figure 13.6 – The OKR framework format of writing goals

Chapter 14

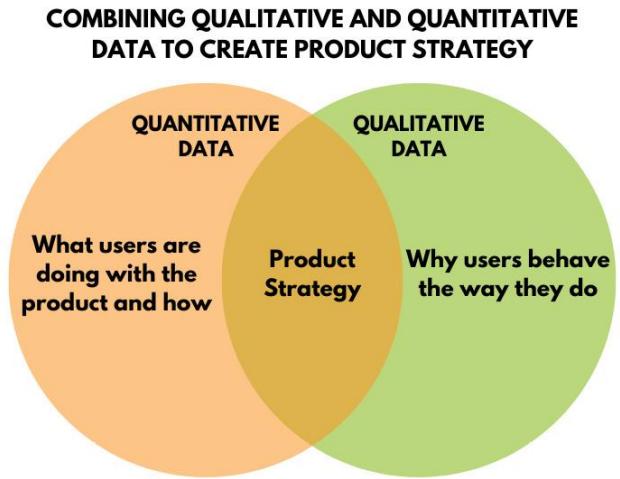


Figure 14.1 – Combining qualitative and quantitative data to create a product strategy

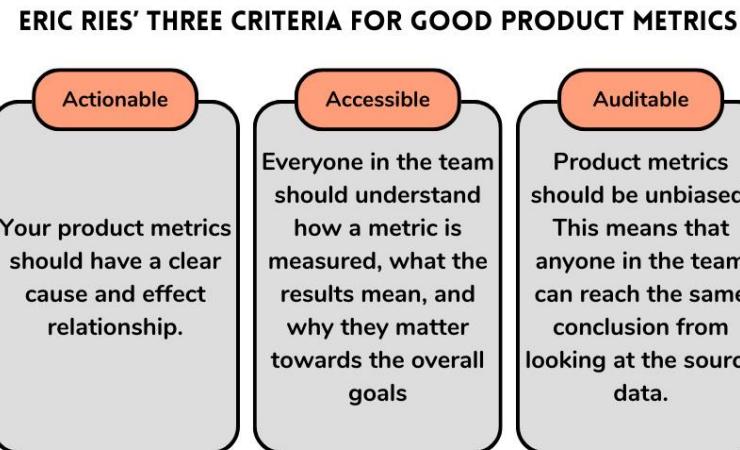


Figure 14.2 – Eric Ries' three criteria for good product metrics

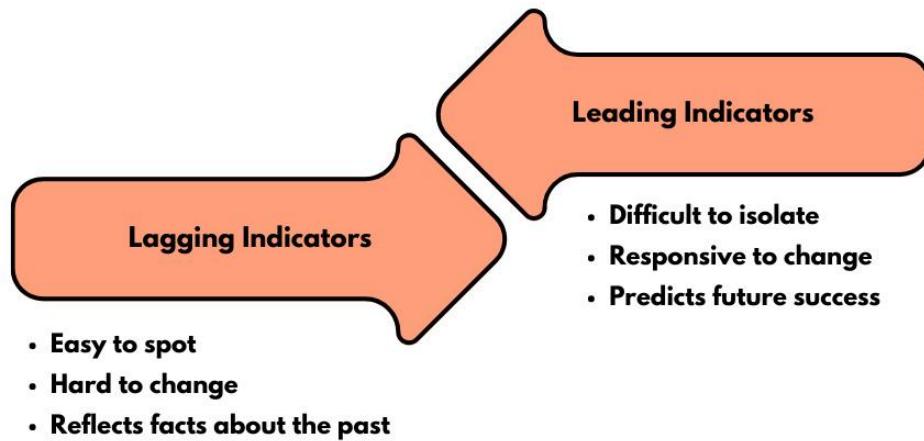


Figure 14.3 – Differences between leading and lagging indicators

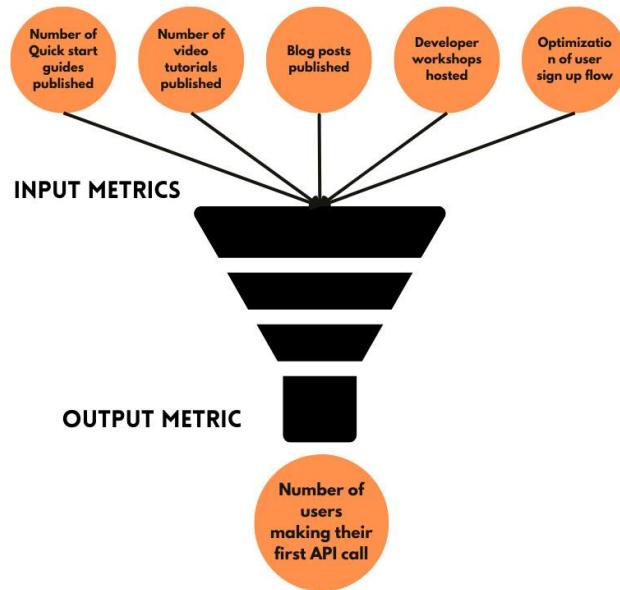
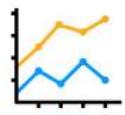


Figure 14.4 – Example of input and output metrics

COMPARING DATA



BAR CHART



LINE CHART



CIRCULAR AREA CHART

SHOWING THE OVERALL COMPOSITION OF DATA



STACKED AREA CHART



PIE CHART



STACKED BAR CHART

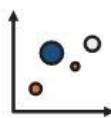
SHOWING THE DISTRIBUTION OF DATA



BAR HISTOGRAM



LINE HISTOGRAM



SCATTER PLOT

SHOWING THE RELATIONSHIP BETWEEN DATA POINTS



SCATTER PLOT

Figure 14.5 – Types of visualizations for different use cases

Chapter 15

Tables

Success metric	Counter metric
The number of API requests: This metric measures the number of requests that are being made to the API	Latency: This counter metric measures the amount of time it takes for the API to process a request and send a response
Success rate: This metric measures the percentage of successful responses to API requests	Error rate: This counter metric measures the percentage of failed responses to API requests
Response time: This metric measures the amount of time it takes for the API to respond to a request	Throughput: This counter metric measures the number of requests that the API can handle within a specific time frame

Table 15.1 – Examples of metrics and counter metrics

Figures

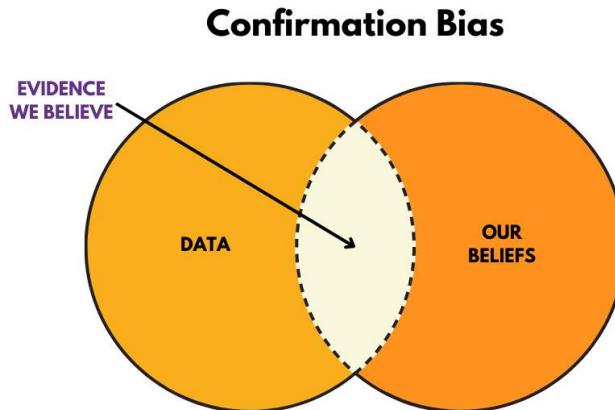


Figure 15.1 – Data being included and ignored in a case of confirmation bias

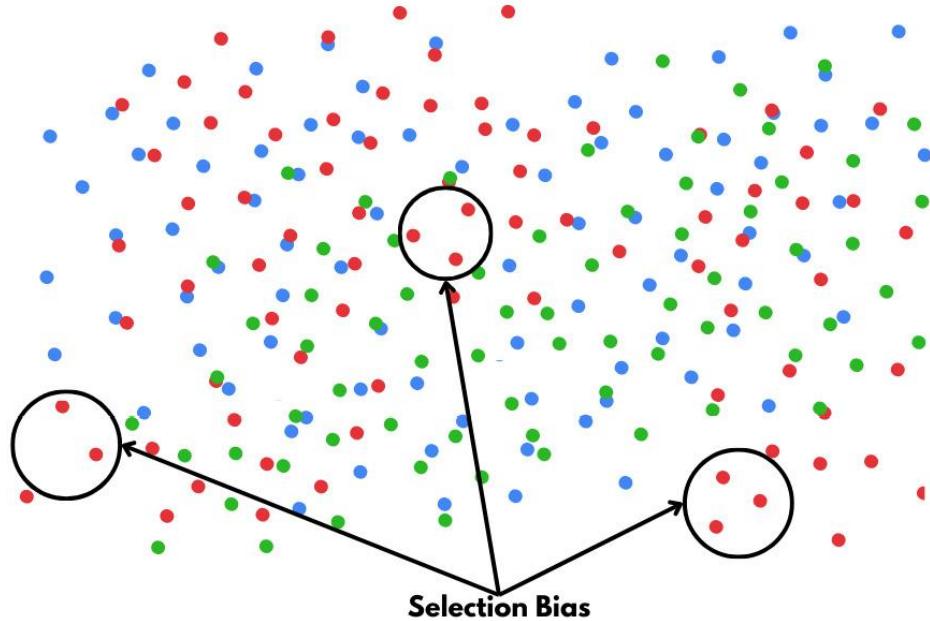


Figure 15.2 – Selection bias skewing our observation, based on the selection of data used for analysis

WHICH ONE WILL YOU CHOOSE?

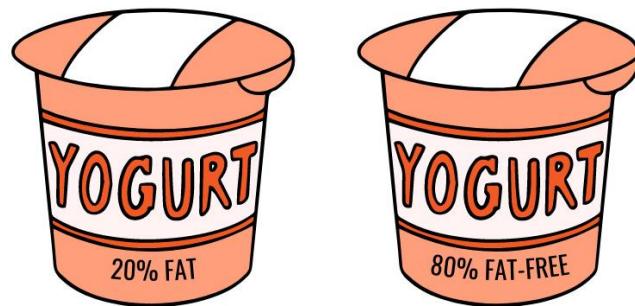


Figure 15.3 – Framing bias demonstrated with yogurt labels

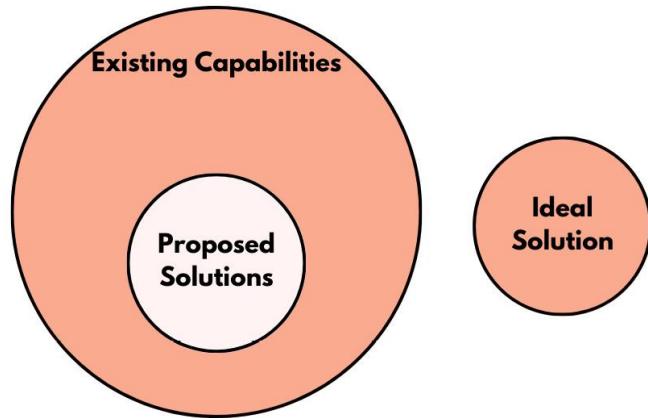


Figure 15.4 – Status quo bias limits your ability to explore solutions beyond the status quo

Chapter 16

Sample strategy document

Imagine that you are the product manager proposing to build a new “Smart Traffic API” and you want to present this product idea to the leadership in your organization. Here is an example of what your product one-pager might look like:

Target Market:

- Cities and municipalities looking to optimize traffic flow and reduce congestion
- Transportation companies looking to improve route planning and delivery efficiency

Competitive Landscape:

- There are several existing traffic APIs on the market, but most are limited in scope and do not offer the level of granularity and real-time data that our API will provide

Value Proposition:

- Our API provides real-time traffic data for major roads and highways, as well as detailed information on traffic incidents and road closures
- Our API also offers advanced features such as predictive traffic analysis and route optimization for transportation companies
- This will help cities and municipalities to make better-informed decisions about traffic management and transportation companies to optimize their routes, saving time and fuel costs

Monetization Strategy:

- We will offer a freemium model, where basic traffic data is available for free, but advanced features such as predictive analysis and route optimization will be offered on a subscription basis
- We will also offer a pay-per-use pricing model for high-volume users

Go-to-Market Strategy:

- We will target cities and municipalities through targeted online and offline advertising campaigns
- We will also reach out to transportation companies through industry events and online marketing campaigns
- We will also offer free trials and demo versions of the API to encourage usage and adoption

Roadmap:

- Phase 1 (Q1): Development of the basic traffic data API
- Phase 2 (Q2): Release of advanced features such as predictive traffic analysis and route optimization
- Phase 3 (Q3): Release of the API for international cities

You could also present this information in a visual roadmap highlighting every activity on a timeline as shown in the following figure:

PRODUCT ROADMAP



Figure 16.1 - Roadmap showing three phases of the Smart Traffic API

Product roadmaps are helpful for all stakeholders to have a single artifact they can all refer to in order to plan their respective team's efforts. Ideally, your roadmap should show when features will be available for beta testing and when they will be available for general release. This way, sales and operations teams can plan their external-facing communication strategy.

Metrics of Success:

- Daily, weekly, and monthly new user sign-ups
- Time to first API call (TTFHW)
- Number of API calls per month
- Number of paying customers
- Average revenue per user
- Customer retention rate

This is just an example, and it should be tailored to the specific product and target market. Also, it should be kept updated as the market and customers change.

The API Analytics Cheat Sheet

API metrics can be segmented into three main categories: Infrastructure, Product Experience, and Business metrics.

Infrastructure metrics provide insight into the performance and reliability of the API, such as uptime and availability. These metrics help ensure that the API is functioning correctly and that users are able to access it smoothly. Product Experience metrics measure how users interact with the API, such as the active users and time to first transaction. These metrics help understand how the API is being used, and identify areas for improvement. Business metrics focus on the impact of the API on the overall business, such as revenue, customer satisfaction, and user engagement. These metrics help understand how the API is contributing to the business objectives and goals.

For a good API analytics strategy, it is important not to try to set up all the metrics on Day 1. Instead, it is better to start by focusing on a few key metrics that align with the current objectives, and then expand and adjust the metrics as the API and the business evolve over time. Use the sheet below to identify the Day 1 and Day 2 metrics that you already have established for your product.

Infrastructure Metrics for APIs			
	Day 1	Day 2	
Performance	<input type="checkbox"/> Uptime and availability	<input type="checkbox"/> Errors per minute	
	<input type="checkbox"/> Average and max latency	<input type="checkbox"/> 90th percentile latency by customer	
	<input type="checkbox"/> Request per minute (RPM)	<input type="checkbox"/> CPU Usage	
Usage	<input type="checkbox"/> Top Endpoints	<input type="checkbox"/> Memory Usage	
	<input type="checkbox"/> Usage by segments	<input type="checkbox"/> Error code distribution	
Reliability	<input type="checkbox"/> Mean Time to Failure (MTTF)	<input type="checkbox"/> Concurrent Connections	
	<input type="checkbox"/> Mean Time to Repair (MTTR)	<input type="checkbox"/> Rate of occurrence of failure (ROCOF)	
	<input type="checkbox"/> Mean Time Between Failure (MTBR)	<input type="checkbox"/> Probability of failure on Demand (POFOD)	
Product Metrics for APIs			
	Day 1	Day 2	
Discovery	<input type="checkbox"/> Unique Visitors	<input type="checkbox"/> Reading Level or Text Complexity Analysis	
	<input type="checkbox"/> Page Views	<input type="checkbox"/> Link Validation	
	<input type="checkbox"/> Signups by Channel		
Engagement	<input type="checkbox"/> Bounce Rate	<input type="checkbox"/> Average time on page	
	<input type="checkbox"/> Customer engagement score (CES)	<input type="checkbox"/> Search Keyword Analysis	
Acquisition	<input type="checkbox"/> Daily User Signups - New User	<input type="checkbox"/> Engagement with tools	
	<input type="checkbox"/> SDK and Version Adoption	<input type="checkbox"/> Time to First Hello World (TTFHW)	
Activation	<input type="checkbox"/> Time to First Transaction (TFT)	<input type="checkbox"/> Time to value (TTV)	
	<input type="checkbox"/> Active Users (DAU/WAU/MAU)	<input type="checkbox"/> Cohort Analysis	
Retention	<input type="checkbox"/> Recurring D/W/M Usage	<input type="checkbox"/> Customer Retention	
	<input type="checkbox"/> Net Promoter Score (NPS)	<input type="checkbox"/> API Calls per Business Transaction	
Experience	<input type="checkbox"/> Top Customers by API usage	<input type="checkbox"/> Unique API Consumers	
	<input type="checkbox"/> Daily Support tickets per active users	<input type="checkbox"/> Conversion Rate	
	<input type="checkbox"/> Customer Satisfaction Scores (CSAT)		
Business Metrics for APIs			
	Day 1	Day 2	
Revenue	<input type="checkbox"/> Monthly Recurring Revenue (MRR)	<input type="checkbox"/> Revenue vs Forecast	
		<input type="checkbox"/> Average Revenue per account (ARPA)	
		<input type="checkbox"/> Revenue by Acquisition Channel	
Adoption	<input type="checkbox"/> SDK Adoption	<input type="checkbox"/> Feature Adoption	
Churn	<input type="checkbox"/> Churn Rate	<input type="checkbox"/> Cohort Retention	
Growth	<input type="checkbox"/> Growth Rate YoY	<input type="checkbox"/> Quota Alignment	
	<input type="checkbox"/> Customer Acquisition Cost (CAC)	<input type="checkbox"/> Net Sales Revenue	
Operations	<input type="checkbox"/> Support Metrics	<input type="checkbox"/> Cost per Lead (CPL)	
	<input type="checkbox"/> Beta vs General Availability	<input type="checkbox"/> Customer Lifetime Value (CLV, LTV)	
		<input type="checkbox"/> Paid Support subscription rate By tier	
		<input type="checkbox"/> Cost of Infrastructure	
		<input type="checkbox"/> Cost of Outage	
		<input type="checkbox"/> Incidents per month	