SI Reliability Design Overview

by Amanda Bridge

Game plan

01 The problem

02 The solution

03 The work

04 Next steps

The problem

HubSpot's strategic integrations team currently manages over **475** API calls.

However, we don't have any best practices to align our response when a 3rd party has an outage or a breaking change that affects our integrations.

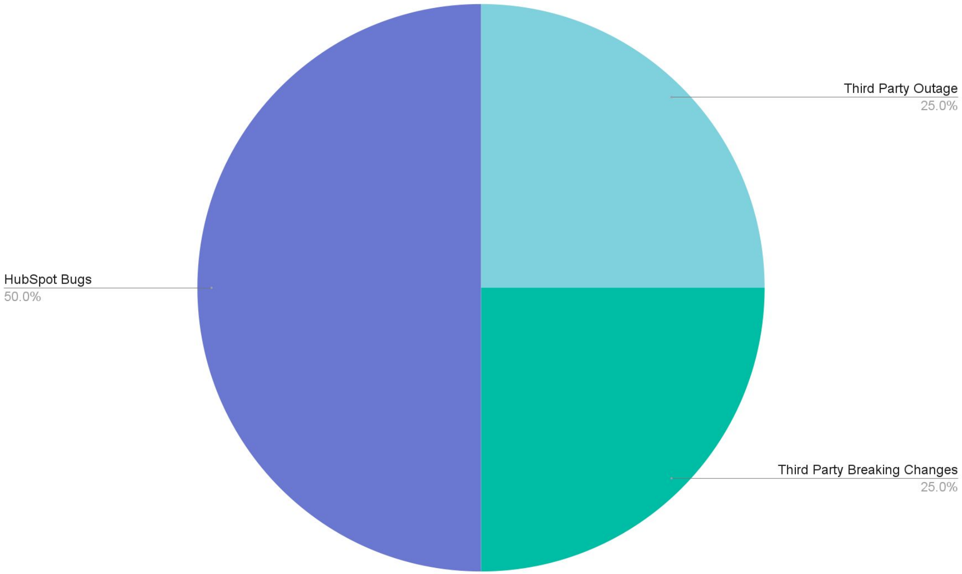
[SI 3rd Party APIs Audit]()

The problem

Why is this important?

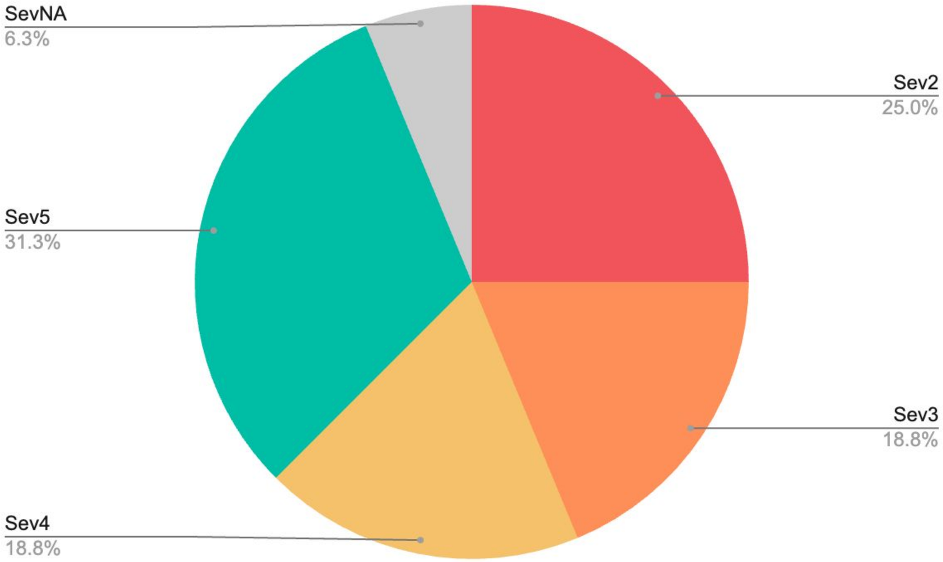
Half of all integration-related critsits in Q1 of this year were related to third party outages and breaking changes.

Integration CritSit Causes Q1 2023



Current state

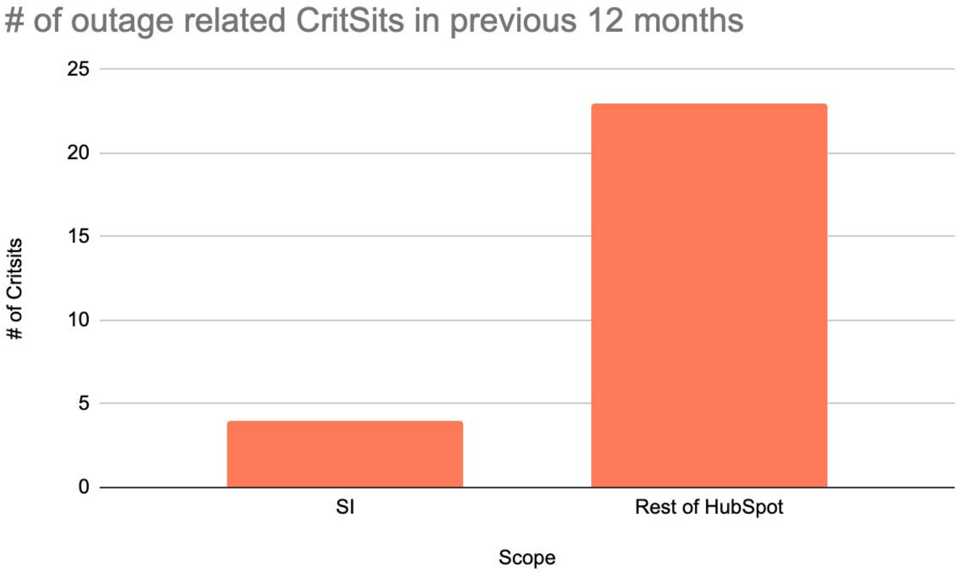
Of these third-party outage-related critsits in Q1, 62.6% were a Sev-4 or worse.



The problem

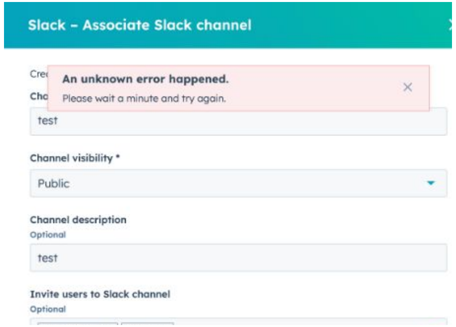
Current state

Out of all of the third-party outage-related critsits in the last 12 months, almost 20% of them are related to and managed by SI teams.



Current state

Despite the amount and severity of these critsits, we don’t have best practices to align our error responses, and so our current UX responses range to acceptable to nonexistent.



Slack – Associate Slack channel

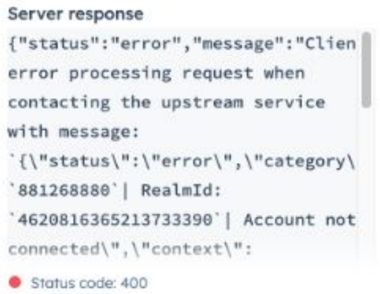
An unknown error happened.
Please wait a minute and try again.

Cre
Cho
test

Channel visibility *
Public

Channel description
Optional
test

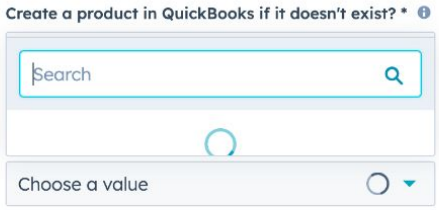
Invite users to Slack channel
Optional



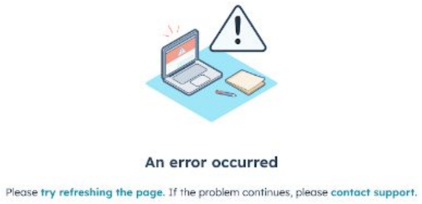
Server response

```
{"status":"error","message":"Clien
error processing request when
contacting the upstream service
with message:
`{\"status\":\"error\",\"category\
`881268880`| RealmId:
`4620816365213733390`| Account not
connected\",\"context\":
```

● Status code: 400



Create a product in QuickBooks if it doesn't exist? *



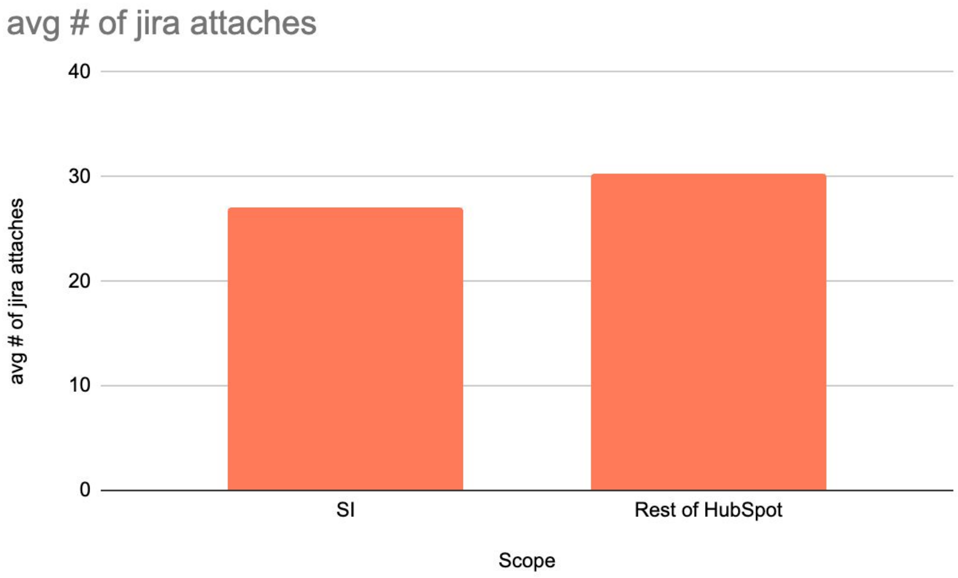
An error occurred

Please try refreshing the page. If the problem continues, please contact support.

Current state

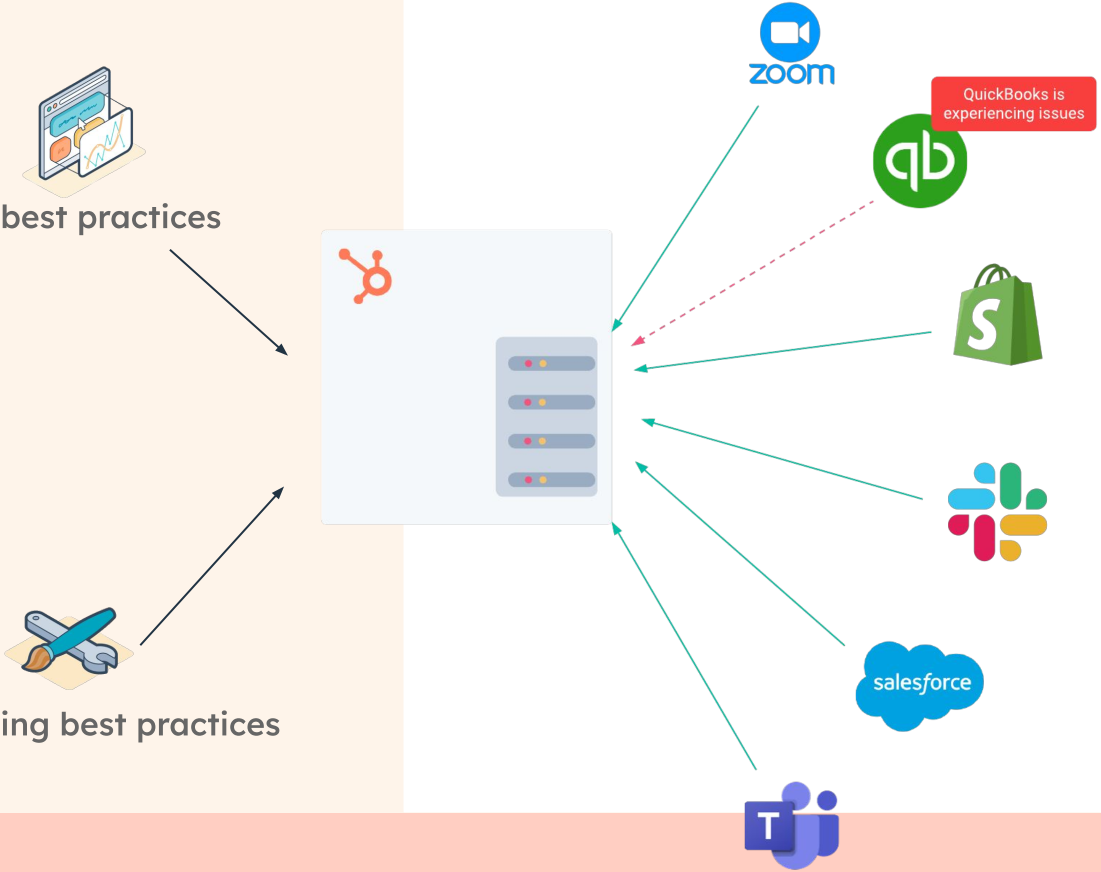
We can quantify the impact on our customer support teams by the number of jira tickets that are attached to support cases.

In comparison to the integration-related support tickets for rest of HubSpot, there is a significant number of jira attachments related to SI.



The solution

While we cannot control the uptime of third parties we integrate with, **we can control what impact 3rd party downtime has on HubSpot**.



UX best practices

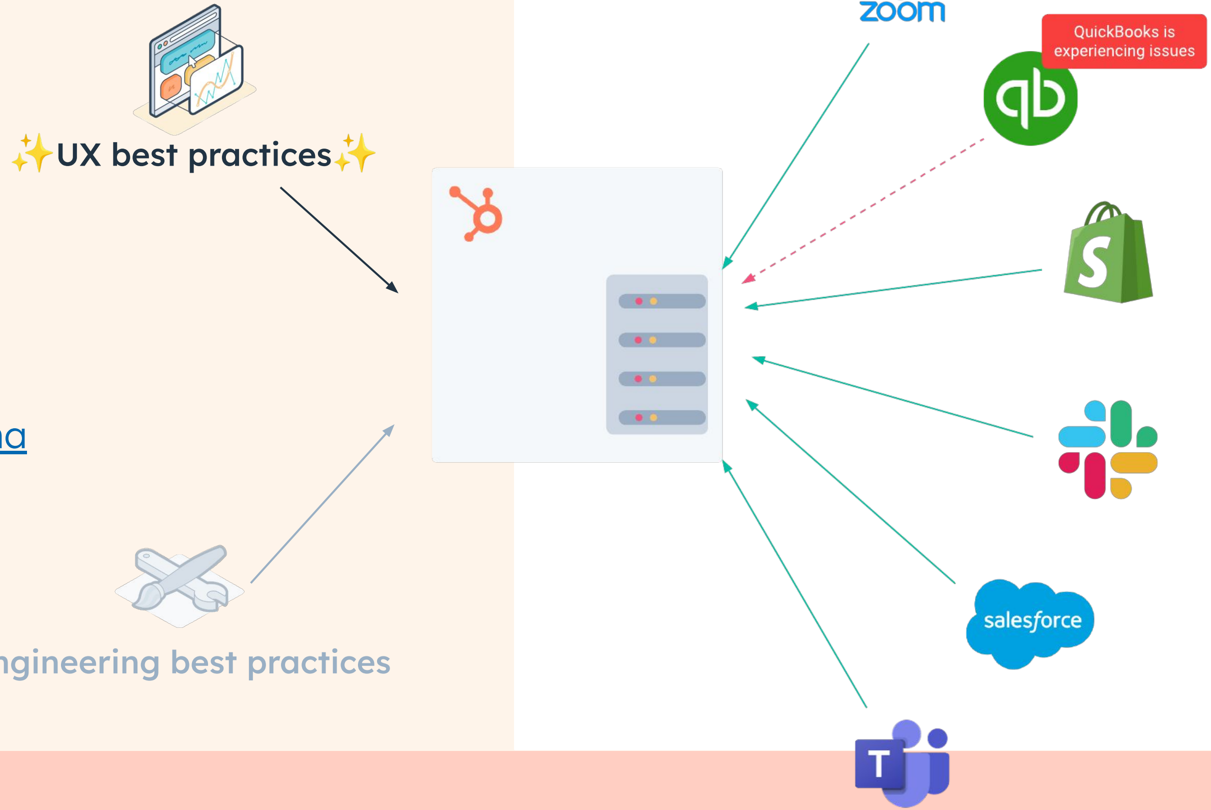
Engineering best practices

QuickBooks is experiencing issues

The UX solution

In this presentation, we’ll mostly cover our **UX solution** to the problem.

[SI Reliability Best Practices Figma]()

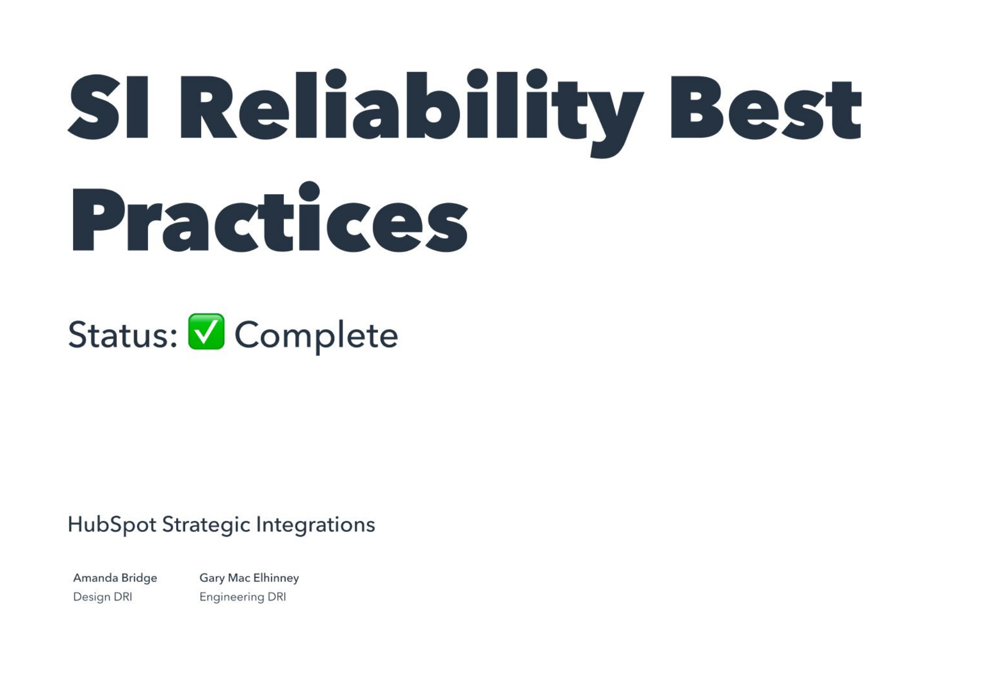


✨UX best practices✨

Engineering best practices

QuickBooks is experiencing issues

What we did



SI Reliability Best Practices

Status: ✅ Complete

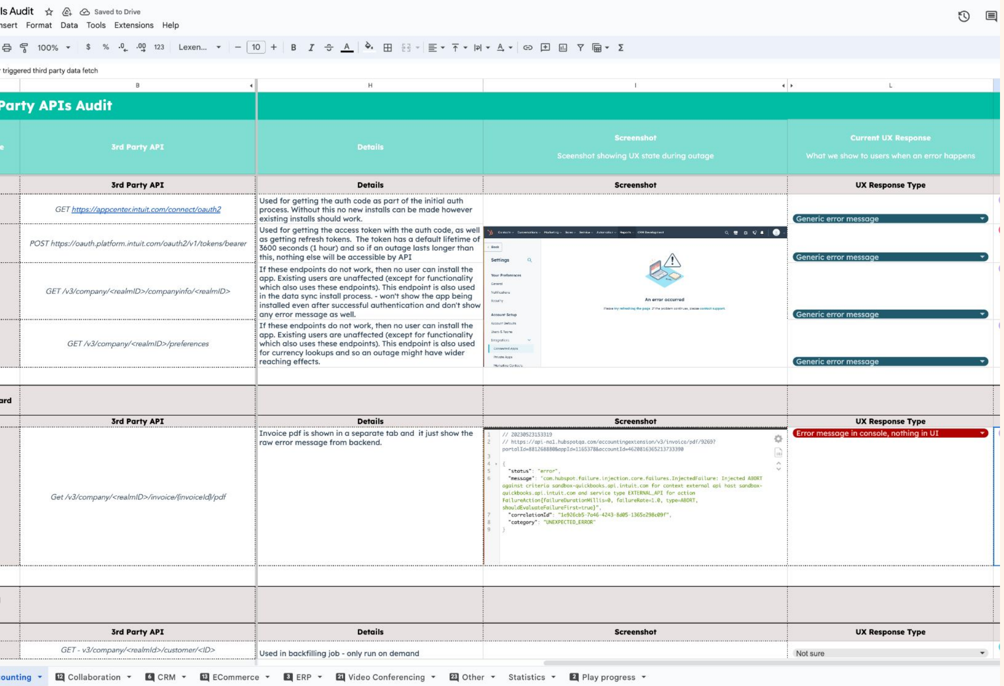
HubSpot Strategic Integrations

Amanda Bridge
Design DRI

Gary Mac Elhinney
Engineering DRI

1. Current state audit
2. Market research
3. Build baseline best practices
4. Analyze and categorize API UX responses
5. Create best practices to solve for +80% of use cases
6. Create a single source of truth for both eng and UX best practices

What we did



ls Audit
Saved to Drive

triggered third party data fetch

Party APIs Audit

3rd Party API	Details	Screenshot Sceenshot showing UX state during outage	Current UX Response What we show to users when an error happens
3rd Party API	**Details**	**Screenshot**	**UX Response Type**
GET https://appcenter.intuit.com/connect/oauth2	Used for getting the auth code as part of the initial auth process. Without this no new installs can be made however existing installs should work.		Generic error message
POST https://oauth.platform.intuit.com/oauth2/v1/tokens/bearer	Used for getting the access token with the auth code, as well as getting refresh tokens. The token has a default lifetime of 3600 seconds (1 hour) and so if an outage lasts longer than this, nothing else will be accessible by API	An error occurred	Generic error message
GET /v3/company/<realmID>/companyinfo/<realmID>	If these endpoints do not work, then no user can install the app. Existing users are unaffected (except for functionality which also uses these endpoints). This endpoint is also used in the data sync install process. - won't show the app being installed even after successful authentication and don't show any error message as well.		Generic error message
GET /v3/company/<realmID>/preferences	If these endpoints do not work, then no user can install the app. Existing users are unaffected (except for functionality which also uses these endpoints). This endpoint is also used for currency lookups and so an outage might have wider reaching effects.		Generic error message

ard

3rd Party API	Details	Screenshot	UX Response Type
Get /v3/company/<realmID>/invoice/{invoiceId}/pdf	Invoice pdf is shown in a separate tab and it just show the raw error message from backend.		Error message in console, nothing in UI

```
// 20230523153319
// https://api-na1.hubspotqa.com/accountingextension/v3/invoice/pdf/9269?portalId=881268880&appId=1165378&accountId=4620816365213733390

{
  "status": "error",
  "message": "com.hubspot.failure.injection.core.failures.InjectedFailure: Injected ABORT against criteria sandbox-quickbooks.api.intuit.com for context external api host sandbox-quickbooks.api.intuit.com and service type EXTERNAL_API for action FailureAction{failureDurationMillis=0, failureRate=1.0, type=ABORT, shouldEvaluateFailureFirst=true}",
  "correlationId": "1e926cb5-7a46-4243-8d05-1365c298c09f",
  "category": "UNEXPECTED_ERROR"
}
```

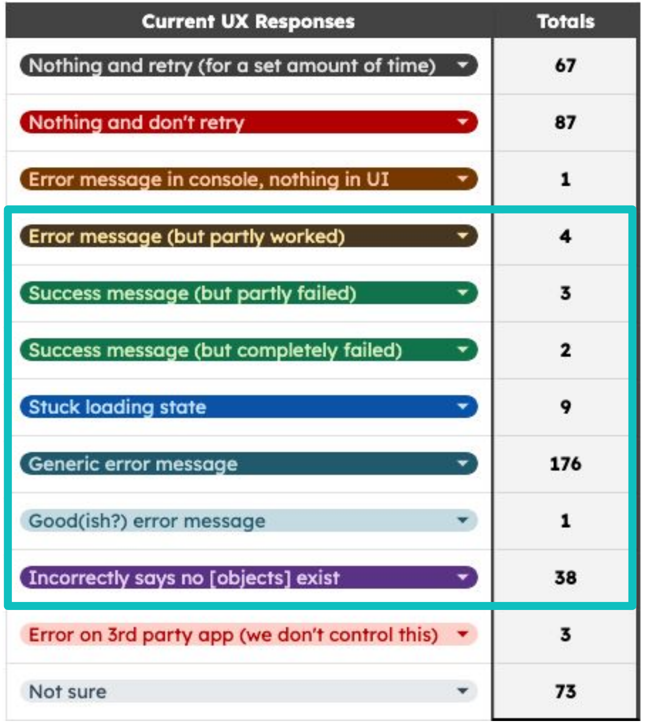
3rd Party API	Details	Screenshot	UX Response Type
GET - v3/company/<realmId>/customer/<ID>	Used in backfilling job - only run on demand		Not sure

1. **Current state audit**
2. Market research
3. Build baseline best practices
4. Analyze and categorize API UX responses
5. Create best practices to solve for +80% of use cases
6. Create a single source of truth for both eng and UX best practices

What we did

Current state

We give feedback when something goes wrong for **50%** of the use cases.



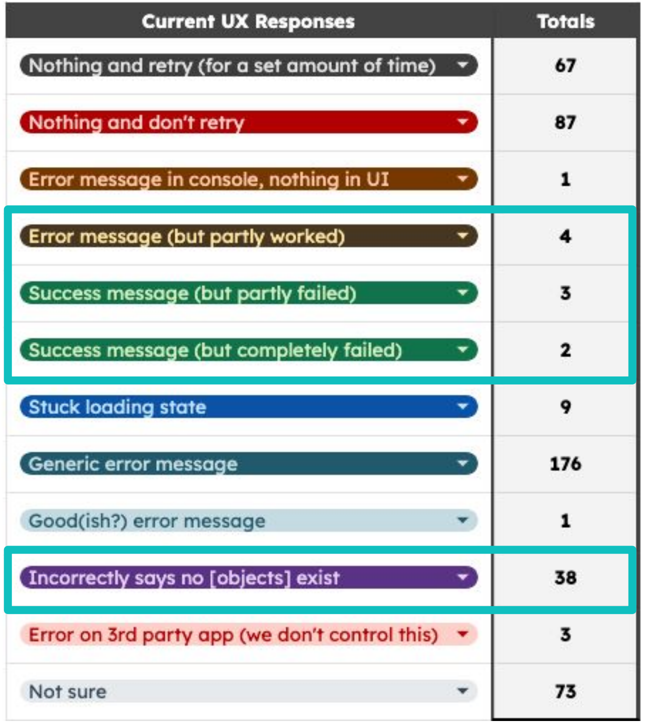
Current UX Responses	Totals
Nothing and retry (for a set amount of time)	67
Nothing and don't retry	87
Error message in console, nothing in UI	1
Error message (but partly worked)	4
Success message (but partly failed)	3
Success message (but completely failed)	2
Stuck loading state	9
Generic error message	176
Good(ish?) error message	1
Incorrectly says no [objects] exist	38
Error on 3rd party app (we don't control this)	3
Not sure	73

Audit link

What we did

Current state

10% of the time, our feedback is **incorrect** or false.



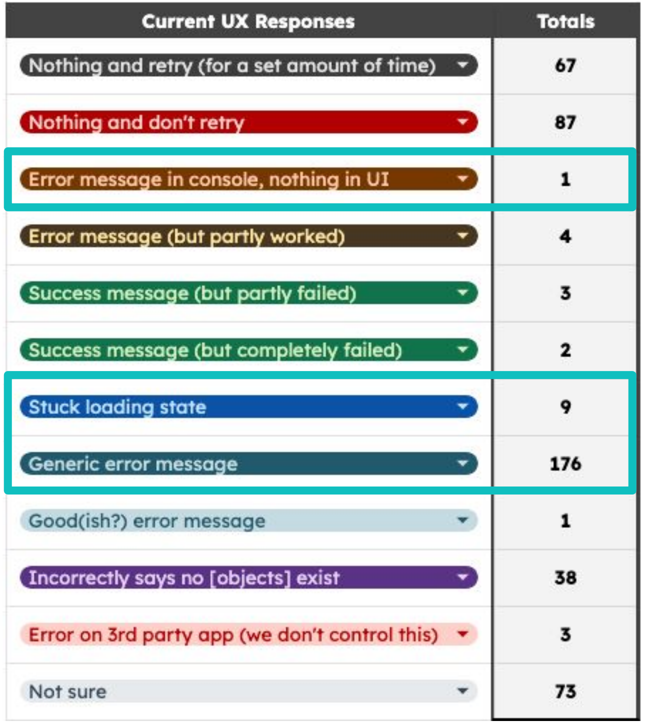
Current UX Responses	Totals
Nothing and retry (for a set amount of time)	67
Nothing and don't retry	87
Error message in console, nothing in UI	1
Error message (but partly worked)	4
Success message (but partly failed)	3
Success message (but completely failed)	2
Stuck loading state	9
Generic error message	176
Good(ish?) error message	1
Incorrectly says no [objects] exist	38
Error on 3rd party app (we don't control this)	3
Not sure	73

Audit link

What we did

Current state

40% of the time, our explanations are either **hard to find** (e.g. in the console) or **not helpful** (stuck loading state without explanation or a generic explanation that doesn't help the user understand what's going on - "Something went wrong. Please try again later.")

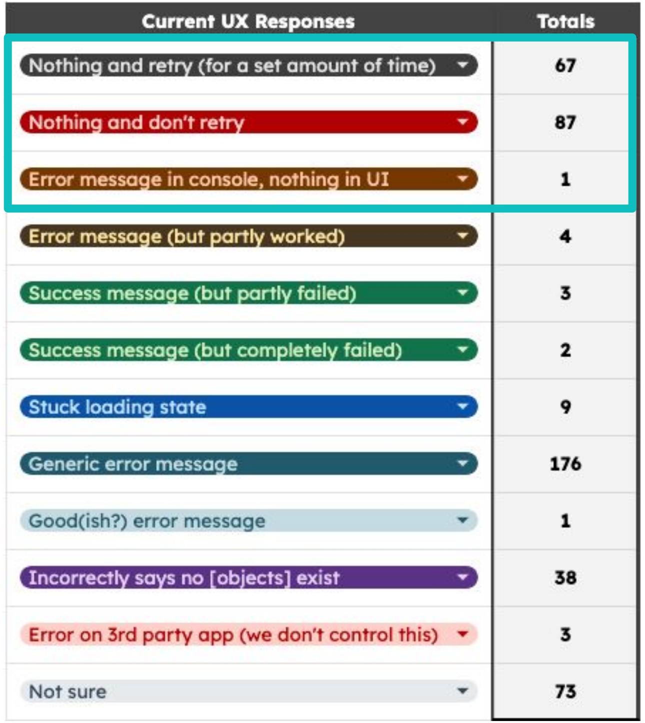


Current UX Responses	Totals
Nothing and retry (for a set amount of time)	67
Nothing and don't retry	87
Error message in console, nothing in UI	1
Error message (but partly worked)	4
Success message (but partly failed)	3
Success message (but completely failed)	2
Stuck loading state	9
Generic error message	176
Good(ish?) error message	1
Incorrectly says no [objects] exist	38
Error on 3rd party app (we don't control this)	3
Not sure	73

Audit link

Current state

What’s most concerning is that in response to an outage of **33%** of all API calls, the user **isn’t given any indication in the UI that the operation has failed**, leading to false assumptions that something did work when it did not.

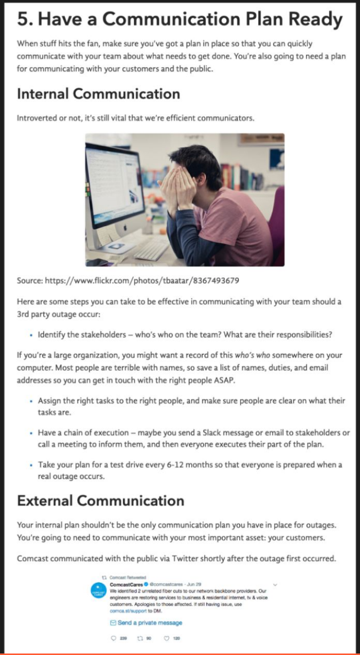


Current UX Responses	Totals
Nothing and retry (for a set amount of time)	67
Nothing and don’t retry	87
Error message in console, nothing in UI	1
Error message (but partly worked)	4
Success message (but partly failed)	3
Success message (but completely failed)	2
Stuck loading state	9
Generic error message	176
Good(ish?) error message	1
Incorrectly says no [objects] exist	38
Error on 3rd party app (we don’t control this)	3
Not sure	73

Audit link

What we did

https://www.catchpoint.com/blog/third-party-outage



5. Have a Communication Plan Ready

When stuff hits the fan, make sure you've got a plan in place so that you can quickly communicate with your team about what needs to get done. You're also going to need a plan for communicating with your customers and the public.

Internal Communication

Introverted or not, it's still vital that we're efficient communicators.

Source: https://www.flickr.com/photos/tbaatar/8367493679

Here are some steps you can take to be effective in communicating with your team should a 3rd party outage occur:

- Identify the stakeholders – who's who on the team? What are their responsibilities?

If you're a large organization, you might want a record of this *who's who* somewhere on your computer. Most people are terrible with names, so save a list of names, duties, and email addresses so you can get in touch with the right people ASAP.

- Assign the right tasks to the right people, and make sure people are clear on what their tasks are.
- Have a chain of execution – maybe you send a Slack message or email to stakeholders or call a meeting to inform them, and then everyone executes their part of the plan.
- Take your plan for a test drive every 6-12 months so that everyone is prepared when a real outage occurs.

External Communication

Your internal plan shouldn't be the only communication plan you have in place for outages. You're going to need to communicate with your most important asset: your customers.

Comcast communicated with the public via Twitter shortly after the outage first occurred.

Comcast Retweeted

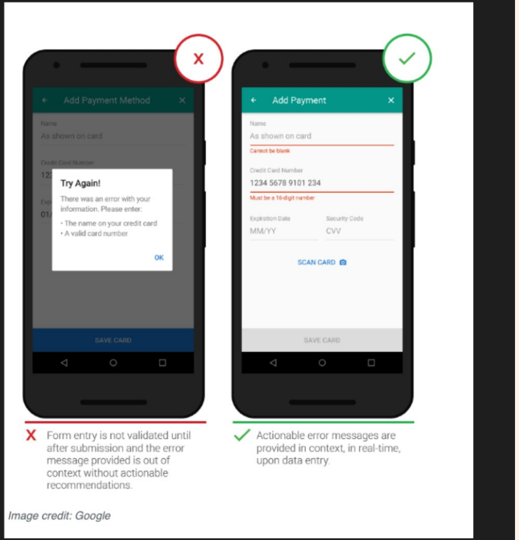
ComcastCares @comcastcares · Jun 29

We identified 2 unrelated fiber outs to our network backbone providers. Our engineers are restoring services to business & residential internet, tv & voice customers. Apologies to those affected. If still having issue, use comca.st/support to DM.

Send a private message

239 90 120

https://usersnap.com/blog/error-messages-best-practices/



Try Again!

There was an error with your information. Please enter:

- The name on your credit card
- A valid card number

OK

Cannot be blank

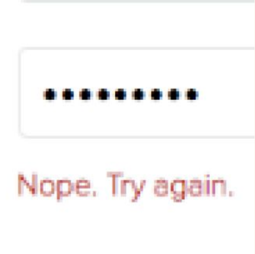
Must be a 16-digit number

X Form entry is not validated until after submission and the error message provided is out of context without actionable recommendations.

✓ Actionable error messages are provided in context, in real-time, upon data entry.

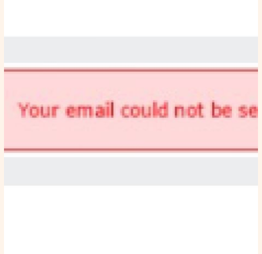
Image credit: Google

1. ✅ Current state audit
2. **Market research**
3. **Build baseline best practices**
4. Analyze and categorize API UX responses
5. Create best practices to solve for +80% of use cases
6. Create a single source of truth for both eng and UX best practices

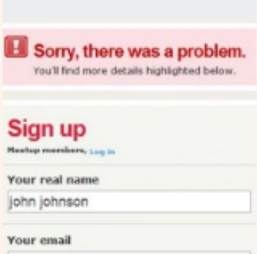


•••••••••

Nope. Try again.



Your email could not be se



Sorry, there was a problem.

You'll find more details highlighted below.

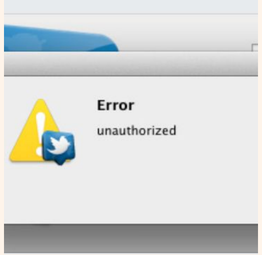
Sign up

Meetup members, Log in

Your real name

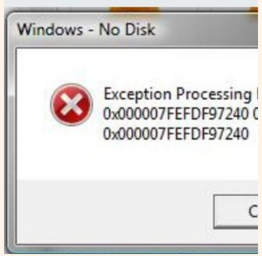
john johnson

Your email



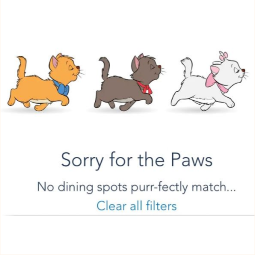
Error

unauthorized



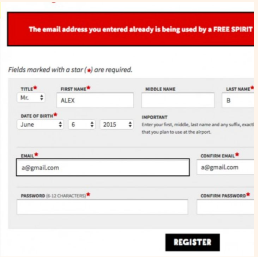
Windows - No Disk

Exception Processing
0x000007FEFDF97240 0
0x000007FEFDF97240



Sorry for the Paws

No dining spots purr-fectly match...



The email address you entered already is being used by a FREE SPIRIT

Fields marked with a star (★) are required.

TITLE★ Mr.

FIRST NAME★ ALEX

MIDDLE NAME

LAST NAME★ B

DATE OF BIRTH★ June 6 2015

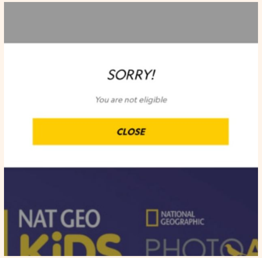
IMPORTANT
Enter your first, middle, last name and any suffix, exactl
that you plan to use at the airport.

EMAIL★ a@gmail.com

CONFIRM EMAIL★ a@gmail.com

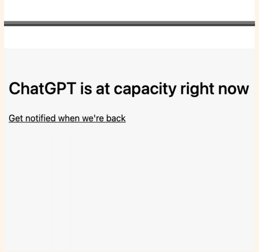
PASSWORD (6-12 CHARACTERS)★

CONFIRM PASSWORD★



SORRY!

You are not eligible



ChatGPT is at capacity right now

Get notified when we're back

Images source 1, images source 2

Research

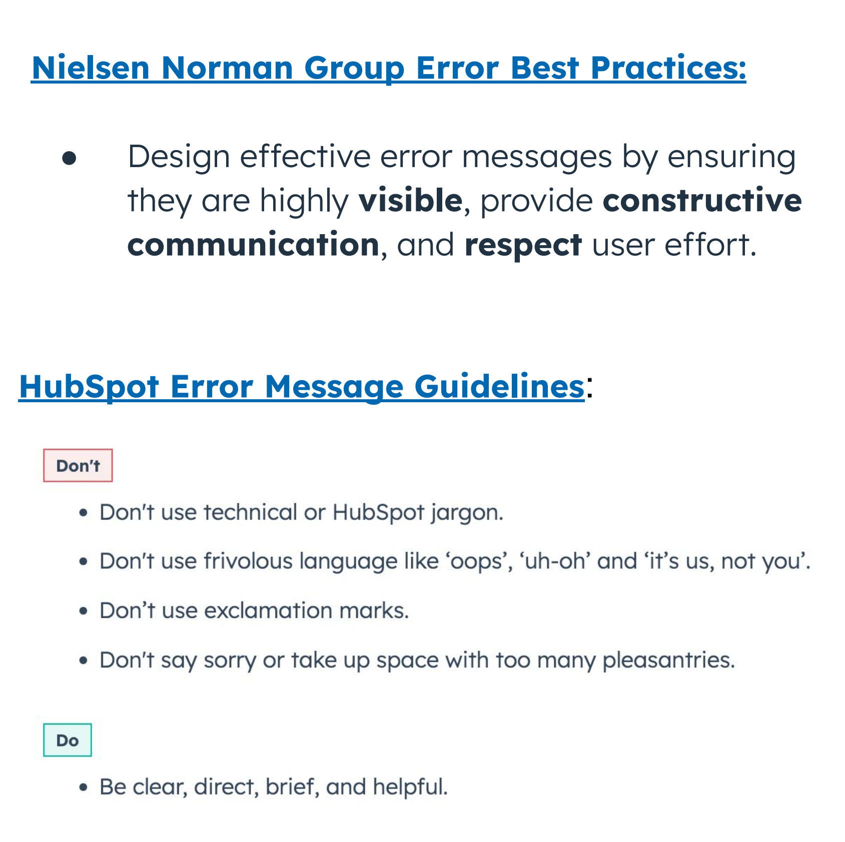
There wasn't a ton of research on building frontend error responses specifically for use cases related to 3rd-party outages.

However, there's a lot of UX guidance on error message best practices.

Research

There wasn’t a ton of research on building frontend error responses specifically for use cases related to 3rd-party outages.

However, there’s a lot of UX guidance on error message best practices.



Nielsen Norman Group Error Best Practices:

- Design effective error messages by ensuring they are highly **visible**, provide **constructive communication**, and **respect** user effort.

HubSpot Error Message Guidelines:

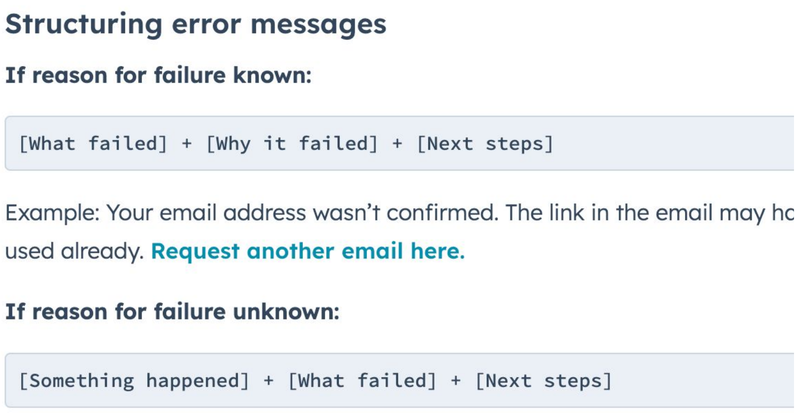
Don’t

- Don’t use technical or HubSpot jargon.
- Don’t use frivolous language like ‘oops’, ‘uh-oh’ and ‘it’s us, not you’.
- Don’t use exclamation marks.
- Don’t say sorry or take up space with too many pleasantries.

Do

- Be clear, direct, brief, and helpful.

HubSpot Error Message Guidelines:



Structuring error messages

If reason for failure known:

```
[What failed] + [Why it failed] + [Next steps]
```

Example: Your email address wasn’t confirmed. The link in the email may hc used already. **Request another email here.**

If reason for failure unknown:

```
[Something happened] + [What failed] + [Next steps]
```

Research

There wasn’t a ton of research on building frontend error responses specifically for use cases related to 3rd-party outages.

However, there’s a lot of UX guidance on error message best practices.

Research

However, these best practices didn’t completely solve for our use cases.

Differences between errors related to 3rd party outages and general errors:

- We **don’t control the solution** or its timeline
- Instead of something simply not working, **data may be outdated and incorrect**
- In some cases, **users might not notice something went wrong** without an error
- **Errors are never in response to an incorrect user input** (i.e. even if the user did everything right, the error would still happen)
- Sometimes, these **errors are temporary and will be fixed without any action** from the user.

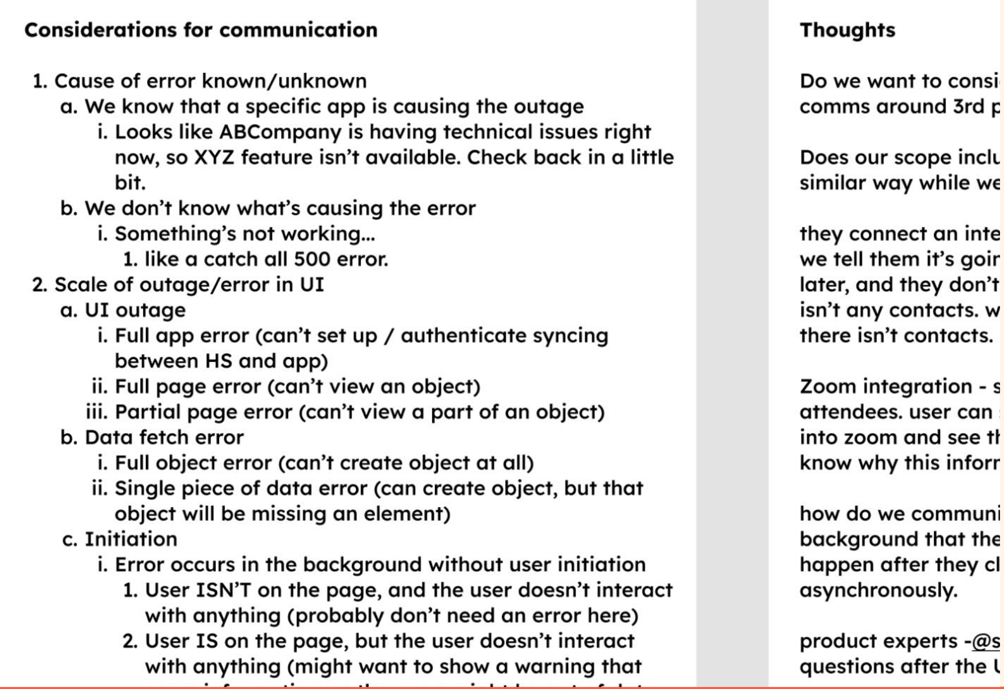
Research

We built best practices that would help guide us in creating effective error responses specifically in response to third-party outages and breaking changes.

HubSpot best practices for errors relating to third-party outages:

- **Be contextual**. Show the error where the user is working.
- **Be timely.** When possible, warn the user *before* they attempt an action that is temporarily affected by an outage.
- **Take the blame**. Do not blame the 3rd party application, and do not reference the outage in case they haven't publicized it yet. Never blame the user.
- **Be human.** Tell people what happened in the most human way possible. Do not show the user a coded error message.
- **Be actionable.** Although there is often no action needed from the user to resolve the error, always provide the user with a next step.

What we did



Considerations for communication

1. Cause of error known/unknown
   a. We know that a specific app is causing the outage
      i. Looks like ABCompany is having technical issues right now, so XYZ feature isn't available. Check back in a little bit.
   b. We don't know what's causing the error
      i. Something's not working...
         1. like a catch all 500 error.
2. Scale of outage/error in UI
   a. UI outage
      i. Full app error (can't set up / authenticate syncing between HS and app)
      ii. Full page error (can't view an object)
      iii. Partial page error (can't view a part of an object)
   b. Data fetch error
      i. Full object error (can't create object at all)
      ii. Single piece of data error (can create object, but that object will be missing an element)
   c. Initiation
      i. Error occurs in the background without user initiation
         1. User ISN'T on the page, and the user doesn't interact with anything (probably don't need an error here)
         2. User IS on the page, but the user doesn't interact with anything (might want to show a warning that

Thoughts

Do we want to consi
comms around 3rd p

Does our scope inclu
similar way while we

they connect an inte
we tell them it's goir
later, and they don't
isn't any contacts. w
there isn't contacts.

Zoom integration - s
attendees. user can
into zoom and see th
know why this inforr

how do we communi
background that the
happen after they cl
asynchronously.

product experts -@s
questions after the

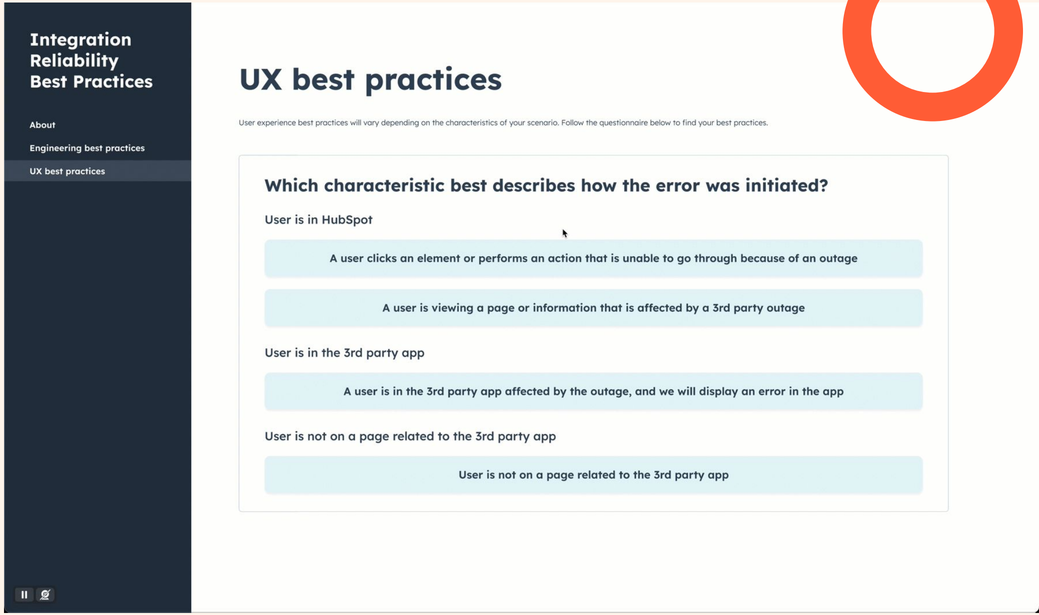
1. ✅ Current state audit
2. ✅Market research
3. ✅ Build baseline best practices
4. **Analyze and categorize API UX responses**
5. Create best practices to solve for +80% of use cases
6. Create a single source of truth for both eng and UX best practices

Analyze and categorize API UX responses

We looked for similarities between API call UX responses and experimented with grouping use cases by criticality, scale, initiation of action, and cause of error.

Analyze and categorize API UX responses

We settled on a combination of where the user is on the page and the features and elements they're interacting with when the error occurs.



Integration Reliability Best Practices
About
Engineering best practices
UX best practices

UX best practices

User experience best practices will vary depending on the characteristics of your scenario. Follow the questionnaire below to find your best practices.

Which characteristic best describes how the error was initiated?

User is in HubSpot

- A user clicks an element or performs an action that is unable to go through because of an outage
- A user is viewing a page or information that is affected by a 3rd party outage

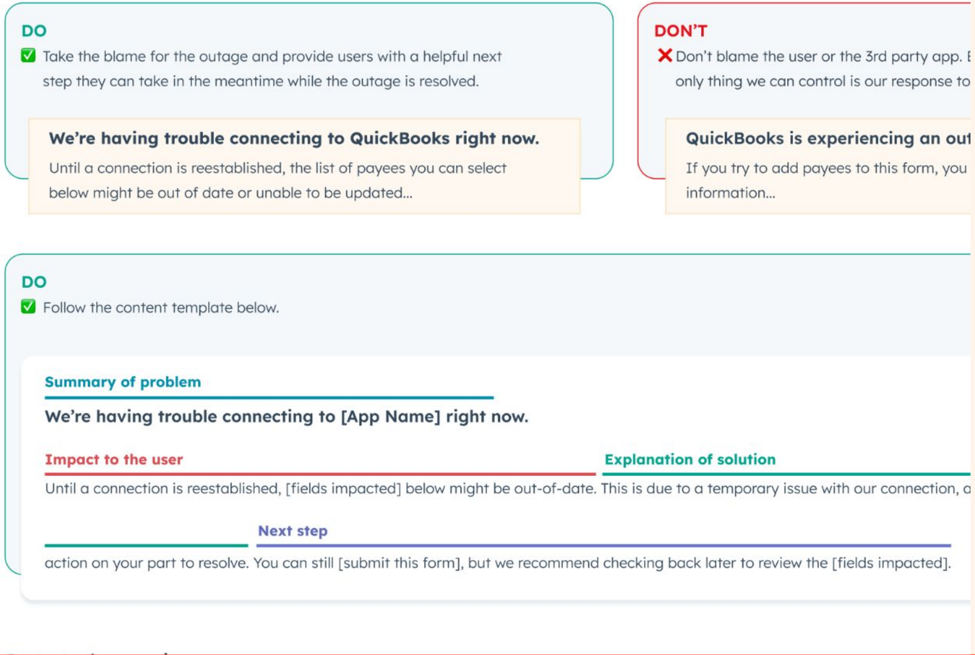
User is in the 3rd party app

- A user is in the 3rd party app affected by the outage, and we will display an error in the app

User is not on a page related to the 3rd party app

- User is not on a page related to the 3rd party app

What we did



DO

✅ Take the blame for the outage and provide users with a helpful next step they can take in the meantime while the outage is resolved.

We're having trouble connecting to QuickBooks right now.

Until a connection is reestablished, the list of payees you can select below might be out of date or unable to be updated...

DON'T

❌ Don't blame the user or the 3rd party app. E
only thing we can control is our response to

QuickBooks is experiencing an out

If you try to add payees to this form, you
information...

DO

✅ Follow the content template below.

Summary of problem

We're having trouble connecting to [App Name] right now.

Impact to the user

Explanation of solution

Until a connection is reestablished, [fields impacted] below might be out-of-date. This is due to a temporary issue with our connection, a

Next step

action on your part to resolve. You can still [submit this form], but we recommend checking back later to review the [fields impacted].

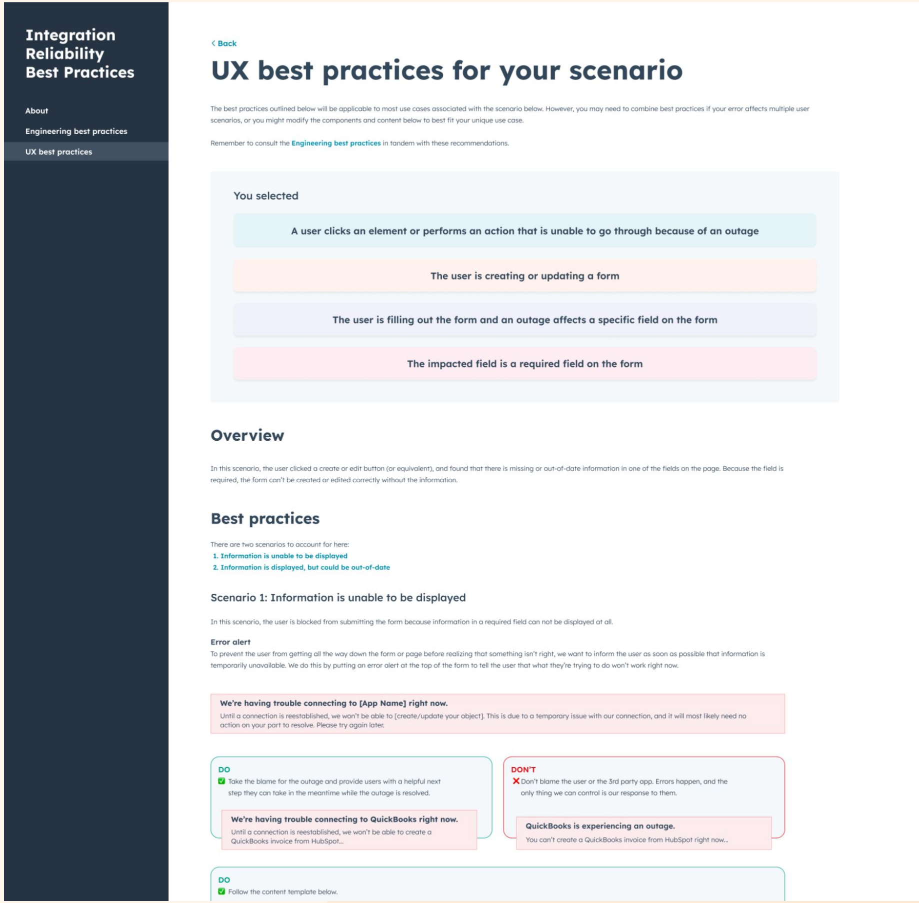
1. ✅ Current state audit
2. ✅Market research
3. ✅ Build baseline best practices
4. ✅ Analyze and categorize API UX responses
5. **Create best practices to solve for +80% of use cases**
6. Create a single source of truth for both eng and UX best practices

What we did: **Create best practices to solve for +80% of use cases**

We identified and built unique best practices for **16 UX scenarios** and **9 engineering scenarios**.

What we did: **Create best practices to solve for +80% of use cases**

Every best practices page has the following sections:



Integration Reliability Best Practices
About
Engineering best practices
UX best practices
‹ Back

UX best practices for your scenario

The best practices outlined below will be applicable to most use cases associated with the scenario below. However, you may need to combine best practices if your error affects multiple user scenarios, or you might modify the components and content below to best fit your unique use case.

Remember to consult the **Engineering best practices** in tandem with these recommendations.

You selected

A user clicks an element or performs an action that is unable to go through because of an outage

The user is creating or updating a form

The user is filling out the form and an outage affects a specific field on the form

The impacted field is a required field on the form

Overview

In this scenario, the user clicked a create or edit button (or equivalent), and found that there is missing or out-of-date information in one of the fields on the page. Because the field is required, the form can't be created or edited correctly without the information.

Best practices

There are two scenarios to account for here:

1. **Information is unable to be displayed**
2. **Information is displayed, but could be out-of-date**

Scenario 1: Information is unable to be displayed

In this scenario, the user is blocked from submitting the form because information in a required field can not be displayed at all.

Error alert
To prevent the user from getting all the way down the form or page before realizing that something isn't right, we want to inform the user as soon as possible that information is temporarily unavailable. We do this by putting an error alert at the top of the form to tell the user that what they're trying to do won't work right now.

We're having trouble connecting to [App Name] right now.
Until a connection is reestablished, we won't be able to [create/update your object]. This is due to a temporary issue with our connection, and it will most likely need no action on your part to resolve. Please try again later.

DO
✓ Take the blame for the outage and provide users with a helpful next step they can take in the meantime while the outage is resolved.

We're having trouble connecting to QuickBooks right now.
Until a connection is reestablished, we won't be able to create a QuickBooks invoice from HubSpot...

DON'T
✗ Don't blame the user or the 3rd party app. Errors happen, and the only thing we can control is our response to them.

QuickBooks is experiencing an outage.
You can't create a QuickBooks invoice from HubSpot right now...

DO
✓ Follow the content template below.

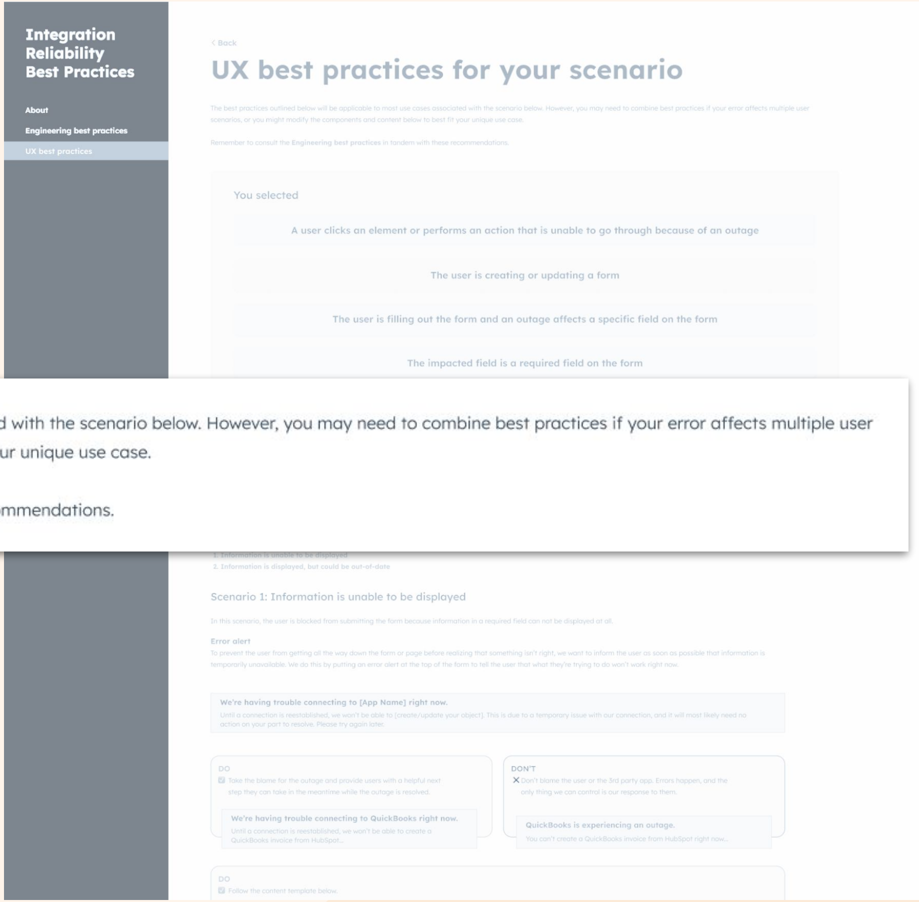
What we did **Create best practices to solve for +80% of use cases**

Every best practices page has the following sections:

1. **Explanation and link to engineering best practices**

The best practices outlined below will be applicable to most use cases associated with the scenario below. However, you may need to combine best practices if your error affects multiple user scenarios, or you might modify the components and content below to best fit your unique use case.

Remember to consult the **Engineering best practices** in tandem with these recommendations.



Integration Reliability Best Practices

- About
- Engineering best practices
- UX best practices

< Back

UX best practices for your scenario

The best practices outlined below will be applicable to most use cases associated with the scenario below. However, you may need to combine best practices if your error affects multiple user scenarios, or you might modify the components and content below to best fit your unique use case.

Remember to consult the **Engineering best practices** in tandem with these recommendations.

You selected

A user clicks an element or performs an action that is unable to go through because of an outage

The user is creating or updating a form

The user is filling out the form and an outage affects a specific field on the form

The impacted field is a required field on the form

1. Information is unable to be displayed
2. Information is displayed, but could be out-of-date

Scenario 1: Information is unable to be displayed

In this scenario, the user is blocked from submitting the form because information in a required field can not be displayed at all.

Error alert

To prevent the user from getting all the way down the form or page before realizing that something isn't right, we want to inform the user as soon as possible that information is temporarily unavailable. We do this by putting an error alert at the top of the form to tell the user that what they're trying to do won't work right now.

We're having trouble connecting to [App Name] right now.
Until a connection is reestablished, we won't be able to [create/update your object]. This is due to a temporary issue with our connection, and it will most likely need no action on your part to resolve. Please try again later.

DO

☑ Take the blame for the outage and provide users with a helpful next step they can take in the meantime while the outage is resolved.

We're having trouble connecting to QuickBooks right now.
Until a connection is reestablished, we won't be able to create a QuickBooks invoice from HubSpot...

DON'T

✗ Don't blame the user or the 3rd party app. Errors happen, and the only thing we can control is our response to them.

QuickBooks is experiencing an outage.
You can't create a QuickBooks invoice from HubSpot right now...

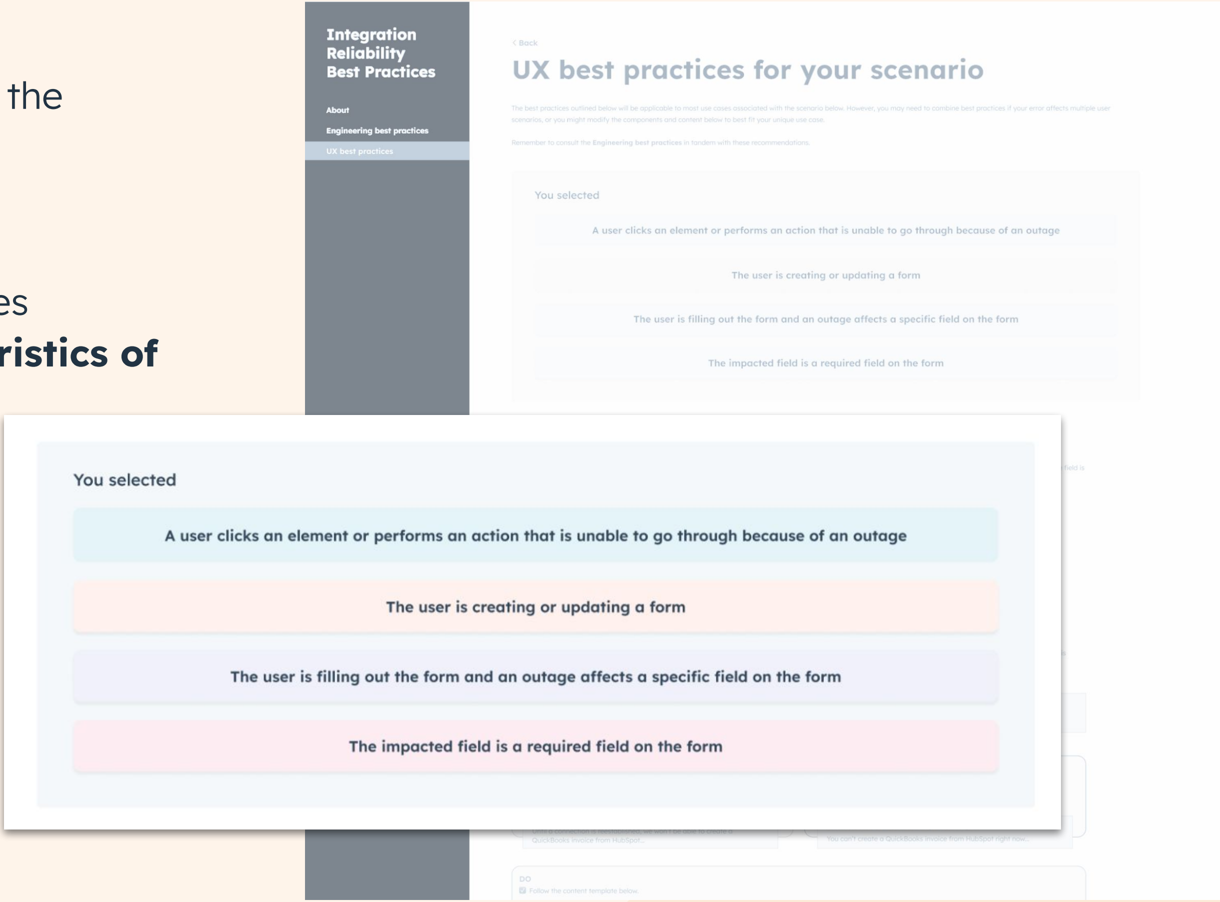
DO

☑ Follow the content template below.

What we did: **Create best practices to solve for +80% of use cases**

Every best practices page has the following sections:

1. Explanation and link to engineering best practices
2. **Parameters / characteristics of use case**



Integration Reliability Best Practices

UX best practices for your scenario

The best practices outlined below will be applicable to most use cases associated with the scenario below. However, you may need to combine best practices if your error affects multiple user scenarios, or you might modify the components and content below to best fit your unique use case.

Remember to consult the **Engineering best practices** in tandem with these recommendations.

You selected

A user clicks an element or performs an action that is unable to go through because of an outage

The user is creating or updating a form

The user is filling out the form and an outage affects a specific field on the form

The impacted field is a required field on the form

You selected

A user clicks an element or performs an action that is unable to go through because of an outage

The user is creating or updating a form

The user is filling out the form and an outage affects a specific field on the form

The impacted field is a required field on the form

Until a connection is reestablished, we won't be able to create a QuickBooks invoice from HubSpot...

You can't create a QuickBooks invoice from HubSpot right now...

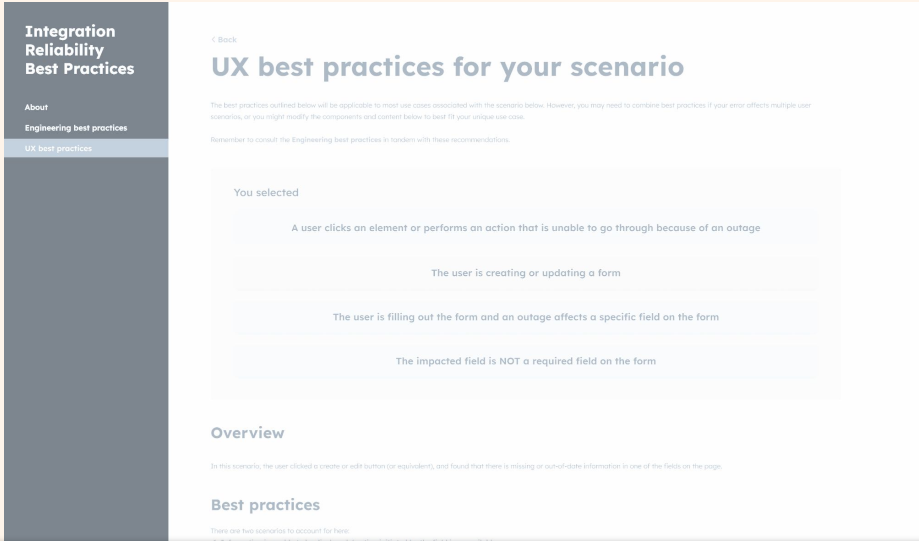
DO

☑ Follow the content template below.

What we did: **Create best practices to solve for +80% of use cases**

Every best practices page has the following sections:

1. Explanation and link to engineering best practices
2. Parameters / characteristics of use case
3. **An overview of the scenario**



Integration Reliability Best Practices

UX best practices for your scenario

The best practices outlined below will be applicable to most use cases associated with the scenario below. However, you may need to combine best practices if your error affects multiple user scenarios, or you might modify the components and content below to best fit your unique use case.

Remember to consult the **Engineering best practices** in tandem with these recommendations.

You selected

A user clicks an element or performs an action that is unable to go through because of an outage

The user is creating or updating a form

The user is filling out the form and an outage affects a specific field on the form

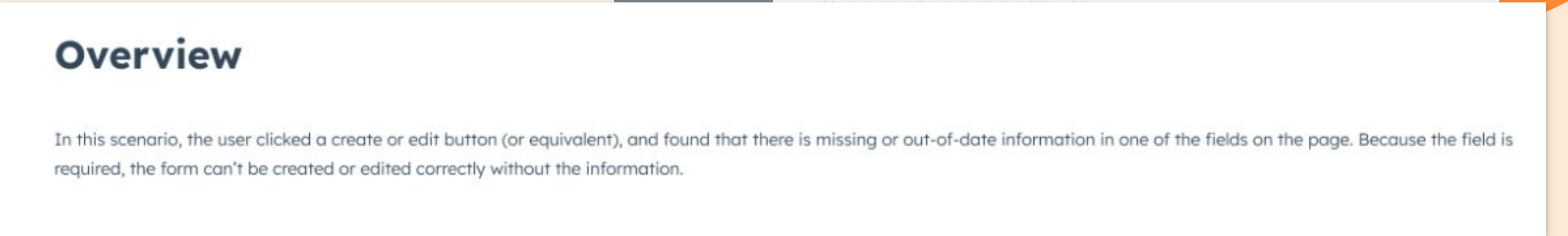
The impacted field is NOT a required field on the form

Overview

In this scenario, the user clicked a create or edit button (or equivalent), and found that there is missing or out-of-date information in one of the fields on the page.

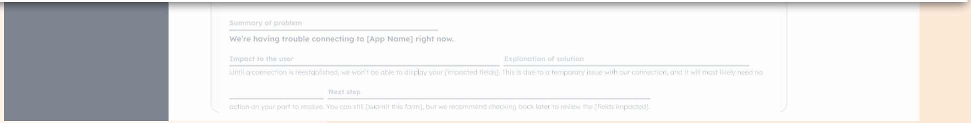
Best practices

There are two scenarios to account for here:



Overview

In this scenario, the user clicked a create or edit button (or equivalent), and found that there is missing or out-of-date information in one of the fields on the page. Because the field is required, the form can't be created or edited correctly without the information.



Summary of problem

We're having trouble connecting to [App Name] right now.

Impact to the user

Until a connection is reestablished, we won't be able to display your [impacted fields].

Explanation of solution

This is due to a temporary issue with our connection, and it will most likely need no action on your part to resolve.

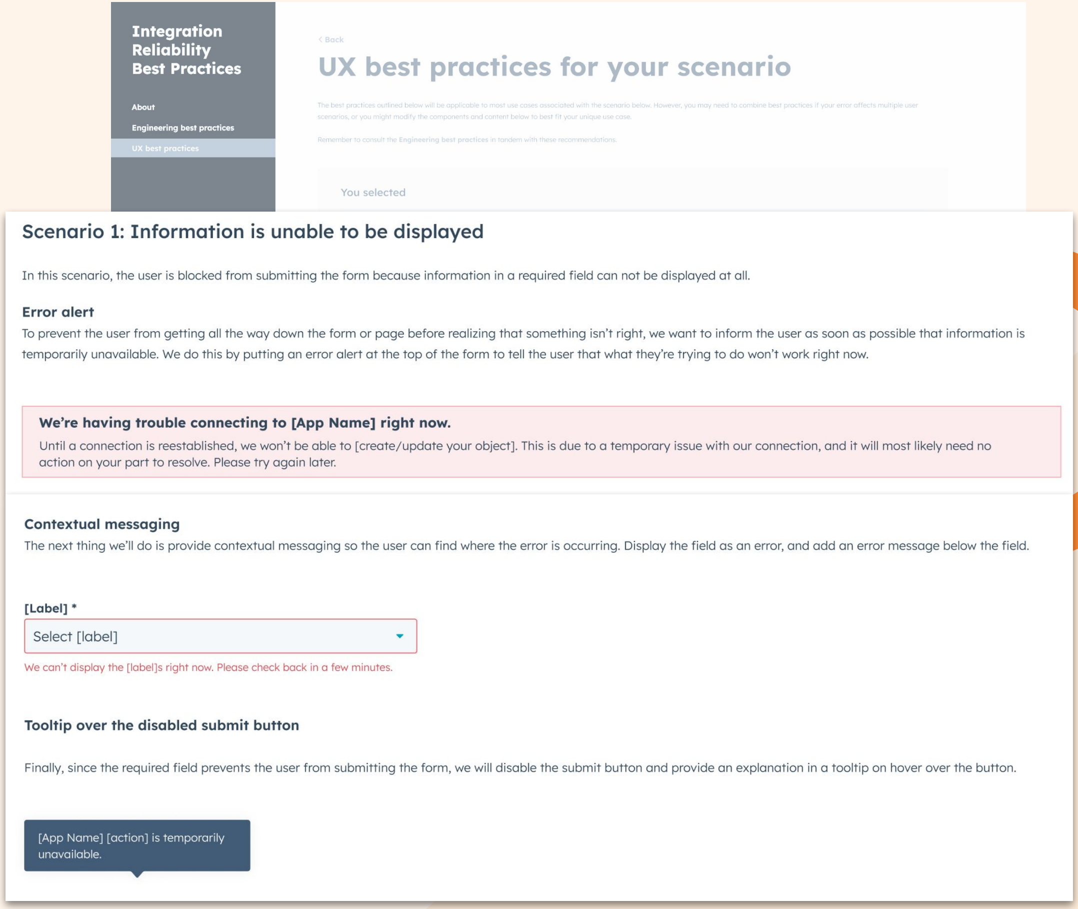
Next step

You can still [submit this form], but we recommend checking back later to review the [fields impacted].

What we did: **Create best practices to solve for +80% of use cases**

Every best practices page has the following sections:

1. Explanation and link to engineering best practices
2. Parameters / characteristics of use case
3. An overview of the scenario
4. **Design best practices**


Integration Reliability Best Practices
About
Engineering best practices
UX best practices
‹ Back

UX best practices for your scenario

The best practices outlined below will be applicable to most use cases associated with the scenario below. However, you may need to combine best practices if your error affects multiple user scenarios, or you might modify the components and content below to best fit your unique use case.

Remember to consult the **Engineering best practices** in tandem with these recommendations.

You selected

Scenario 1: Information is unable to be displayed

In this scenario, the user is blocked from submitting the form because information in a required field can not be displayed at all.

Error alert

To prevent the user from getting all the way down the form or page before realizing that something isn't right, we want to inform the user as soon as possible that information is temporarily unavailable. We do this by putting an error alert at the top of the form to tell the user that what they're trying to do won't work right now.

We're having trouble connecting to [App Name] right now.

Until a connection is reestablished, we won't be able to [create/update your object]. This is due to a temporary issue with our connection, and it will most likely need no action on your part to resolve. Please try again later.

Contextual messaging

The next thing we'll do is provide contextual messaging so the user can find where the error is occurring. Display the field as an error, and add an error message below the field.

[Label] *

Select [label]

We can't display the [label]s right now. Please check back in a few minutes.

Tooltip over the disabled submit button

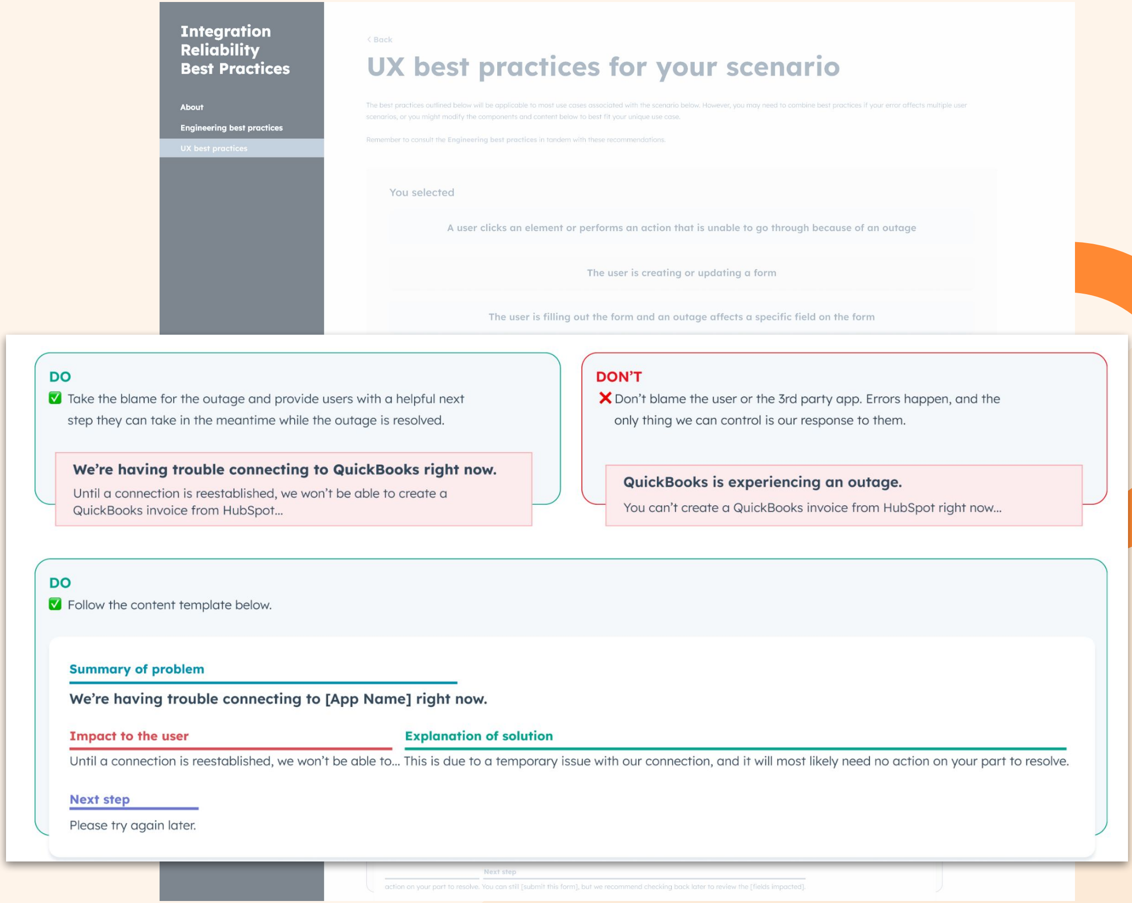
Finally, since the required field prevents the user from submitting the form, we will disable the submit button and provide an explanation in a tooltip on hover over the button.

[App Name] [action] is temporarily unavailable.

What we did: **Create best practices to solve for +80% of use cases**

Every best practices page has the following sections:

1. Explanation and link to engineering best practices
2. Parameters / characteristics of use case
3. An overview of the scenario
4. Design best practices
5. **Content best practices**



Integration Reliability Best Practices
About
Engineering best practices
UX best practices
‹ Back

UX best practices for your scenario

The best practices outlined below will be applicable to most use cases associated with the scenario below. However, you may need to combine best practices if your error affects multiple user scenarios, or you might modify the components and content below to best fit your unique use case.

Remember to consult the **Engineering best practices** in tandem with these recommendations.

You selected

A user clicks an element or performs an action that is unable to go through because of an outage

The user is creating or updating a form

The user is filling out the form and an outage affects a specific field on the form

DO

✅ Take the blame for the outage and provide users with a helpful next step they can take in the meantime while the outage is resolved.

We're having trouble connecting to QuickBooks right now.
Until a connection is reestablished, we won't be able to create a QuickBooks invoice from HubSpot...

DON'T

❌ Don't blame the user or the 3rd party app. Errors happen, and the only thing we can control is our response to them.

QuickBooks is experiencing an outage.
You can't create a QuickBooks invoice from HubSpot right now...

DO

✅ Follow the content template below.

Summary of problem
We're having trouble connecting to [App Name] right now.

Impact to the user
Until a connection is reestablished, we won't be able to...

Explanation of solution
This is due to a temporary issue with our connection, and it will most likely need no action on your part to resolve.

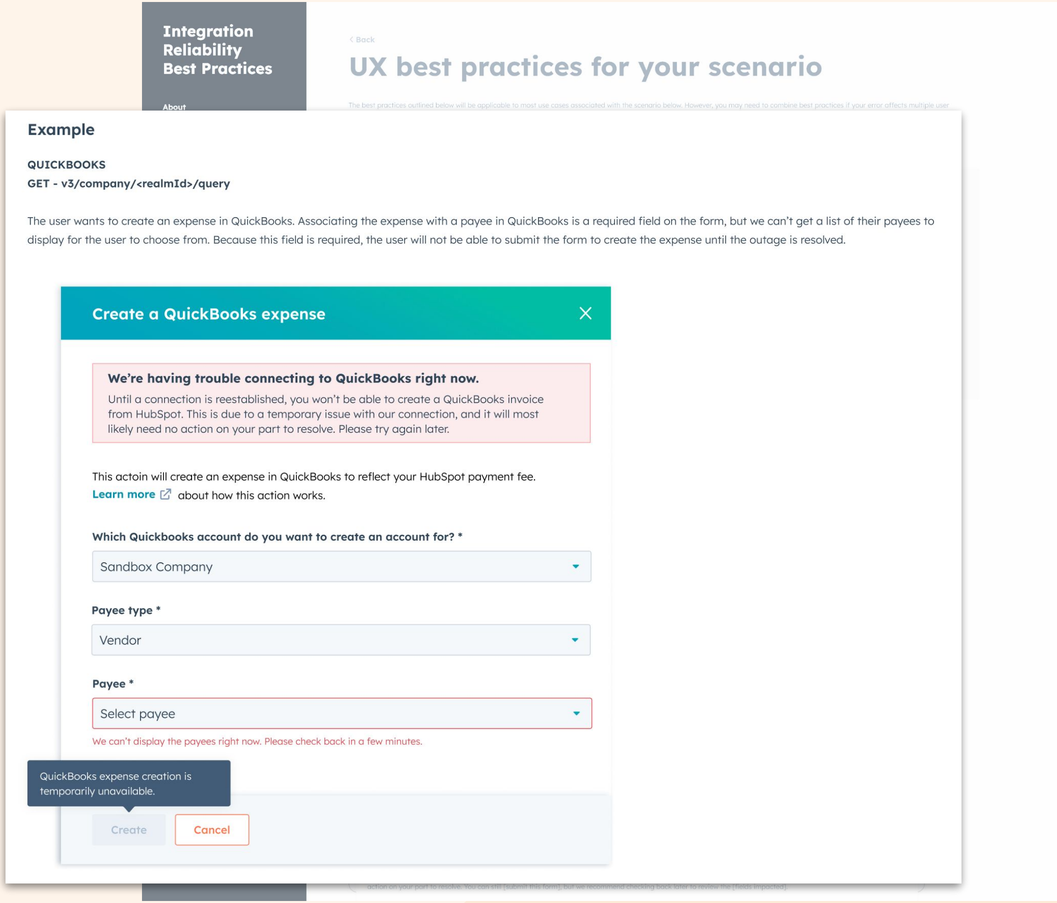
Next step
Please try again later.

Next step
action on your part to resolve. You can still [submit this form], but we recommend checking back later to review the [fields impacted].

What we did: **Create best practices to solve for +80% of use cases**

Every best practices page has the following sections:

1. Explanation and link to engineering best practices
2. Parameters / characteristics of use case
3. An overview of the scenario
4. Design best practices
5. Content best practices
6. **A real example of the guidelines in practice**



UX best practices for your scenario

The best practices outlined below will be applicable to most use cases associated with the scenario below. However, you may need to combine best practices if your error affects multiple user

Example

QUICKBOOKS
GET - v3/company/<realmId>/query

The user wants to create an expense in QuickBooks. Associating the expense with a payee in QuickBooks is a required field on the form, but we can't get a list of their payees to display for the user to choose from. Because this field is required, the user will not be able to submit the form to create the expense until the outage is resolved.

Create a QuickBooks expense

We're having trouble connecting to QuickBooks right now.
Until a connection is reestablished, you won't be able to create a QuickBooks invoice from HubSpot. This is due to a temporary issue with our connection, and it will most likely need no action on your part to resolve. Please try again later.

This actoin will create an expense in QuickBooks to reflect your HubSpot payment fee.
Learn more about how this action works.

Which Quickbooks account do you want to create an account for? *
Sandbox Company

Payee type *
Vendor

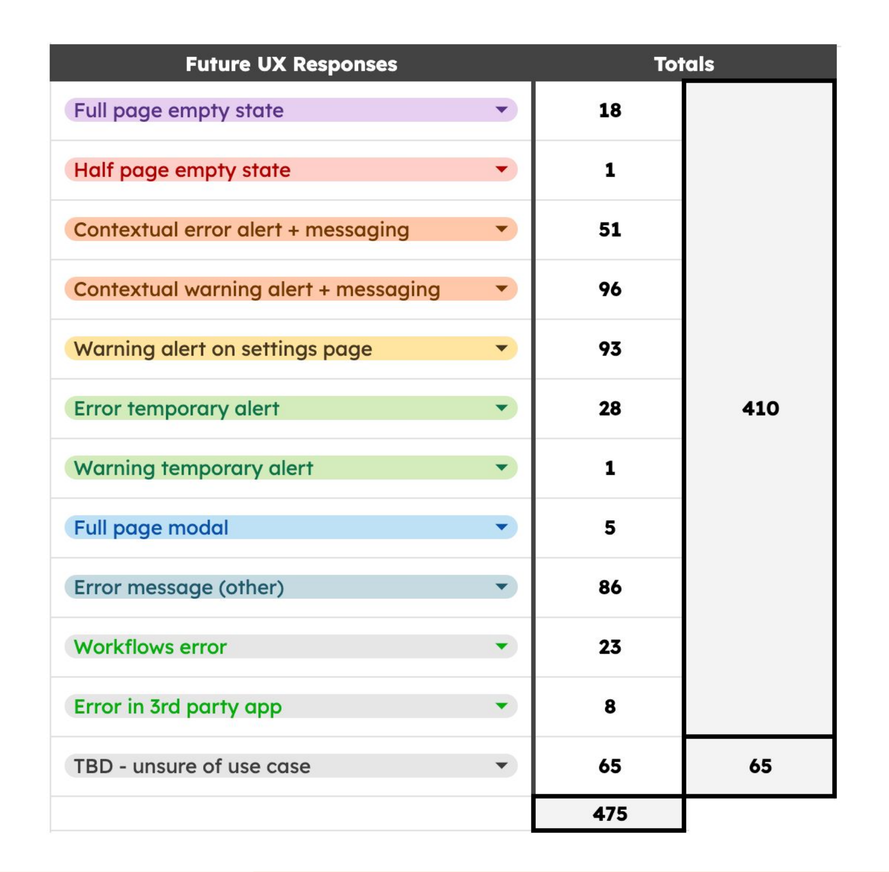
Payee *
Select payee
We can't display the payees right now. Please check back in a few minutes.

QuickBooks expense creation is temporarily unavailable.

action on your part to resolve. You can still [submit this form], but we recommend checking back later to review the [fields impacted].

What we did: **Create best practices to solve for +80% of use cases**

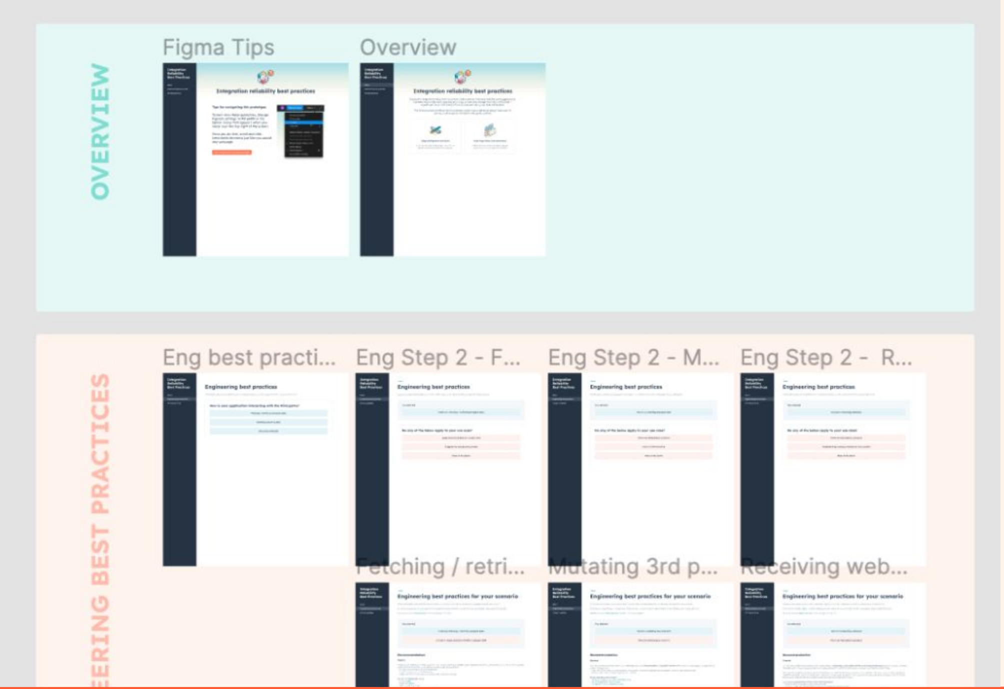
Once applied, these best practices will provide explicit guidelines for **86% of all current SI-owned API calls.**



Future UX Responses	Totals	
Full page empty state	18	410
Half page empty state	1	
Contextual error alert + messaging	51	
Contextual warning alert + messaging	96	
Warning alert on settings page	93	
Error temporary alert	28	
Warning temporary alert	1	
Full page modal	5	
Error message (other)	86	
Workflows error	23	
Error in 3rd party app	8	
TBD - unsure of use case	65	65
	475	

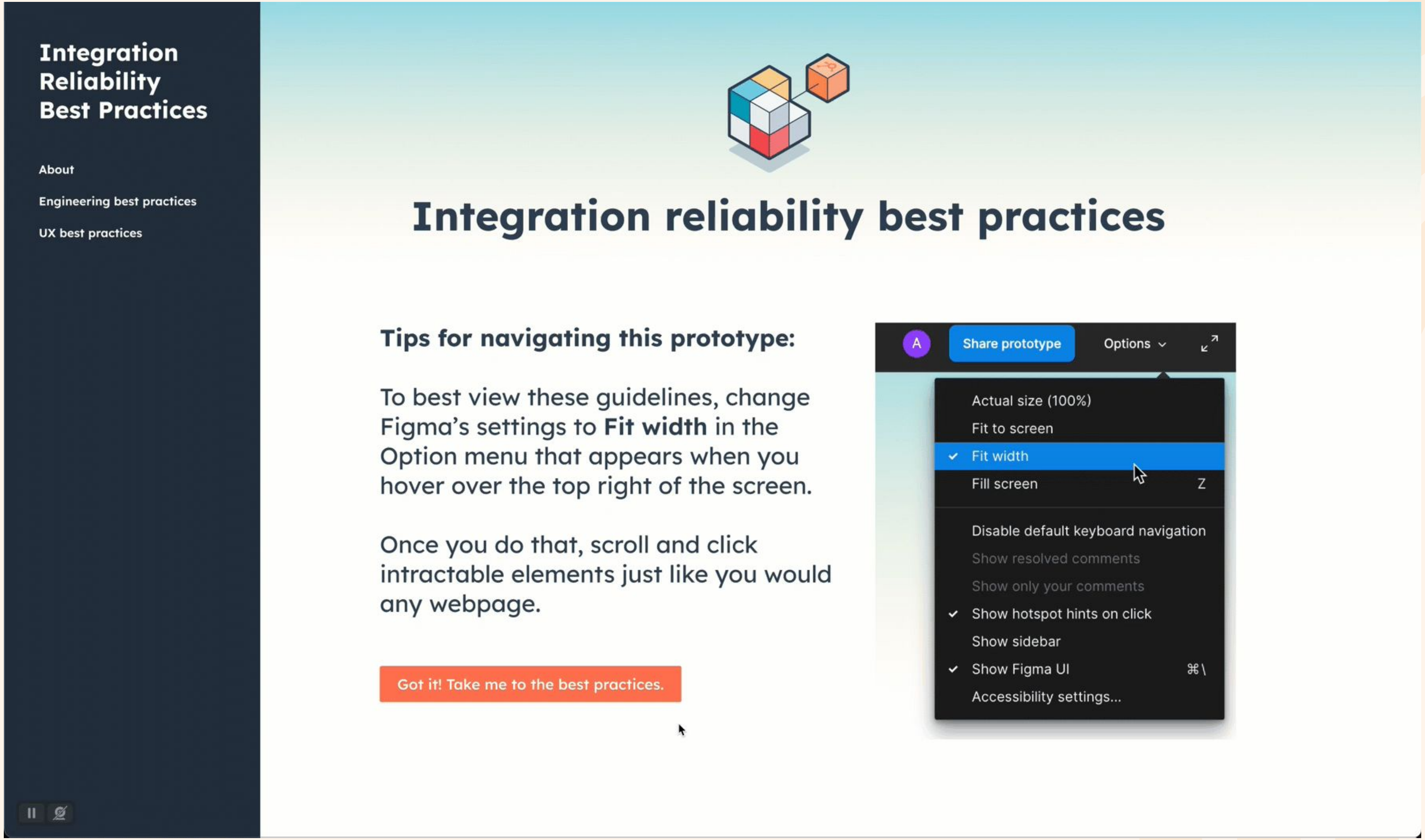
Audit link

What we did



1. ✅ Current state audit
2. ✅ Market research
3. ✅ Build baseline best practices
4. ✅ Analyze and categorize API UX responses
5. ✅ Create best practices to solve for +80% of use cases
6. **Create a single source of truth for both eng and UX best practices**

What we did: **Create a single source of truth for both eng and UX best practices**



Integration Reliability Best Practices

- About
- Engineering best practices
- UX best practices

Integration reliability best practices

Tips for navigating this prototype:

To best view these guidelines, change Figma's settings to **Fit width** in the Option menu that appears when you hover over the top right of the screen.

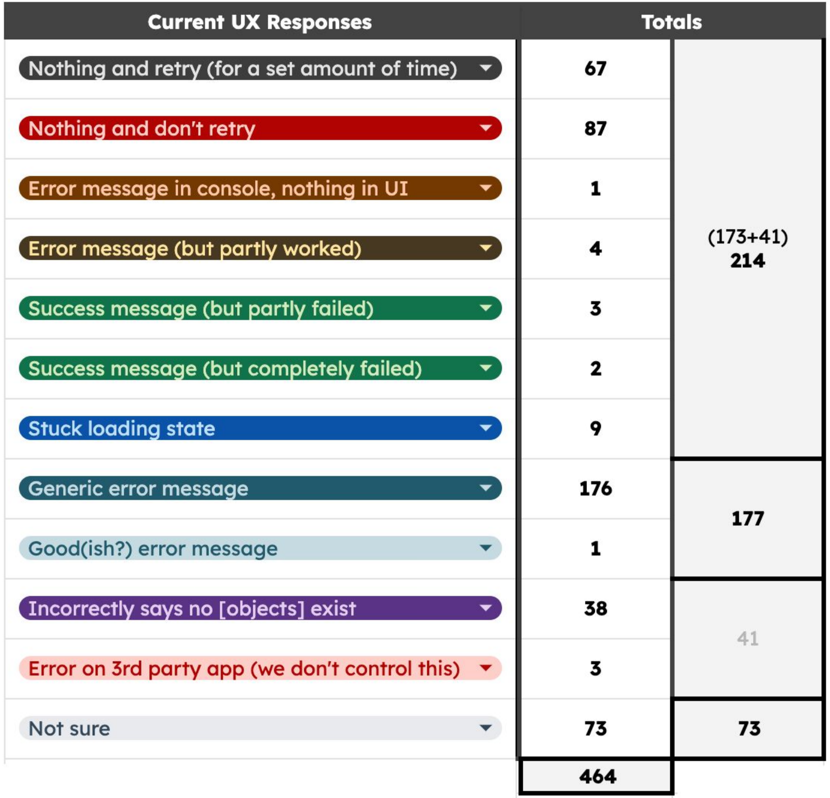
Once you do that, scroll and click intractable elements just like you would any webpage.

Got it! Take me to the best practices.

Figma link

Current UX Responses:

38% have *passable* error response

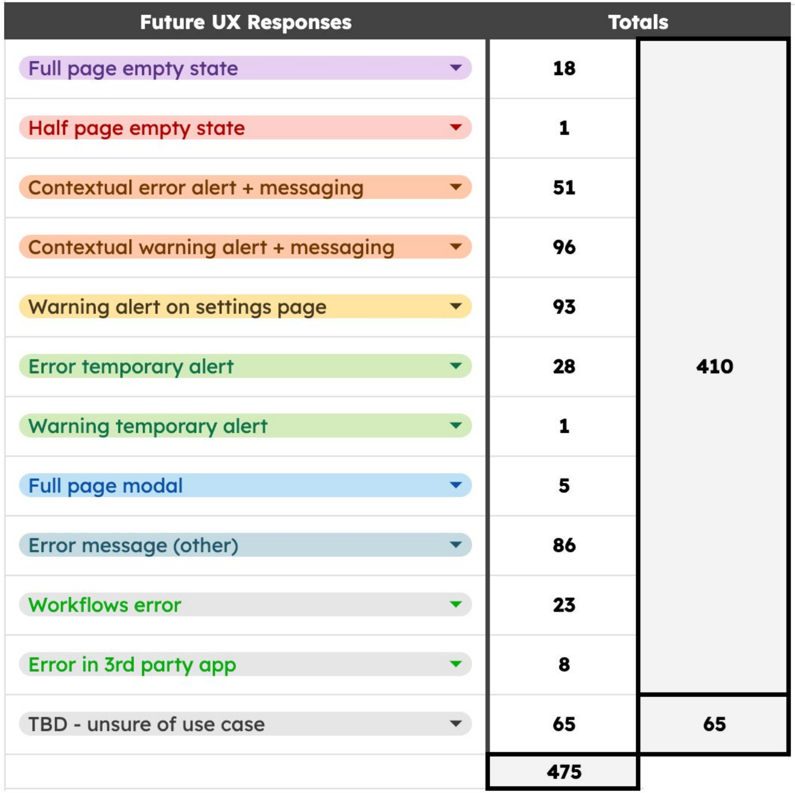


Current UX Responses	Totals	
Nothing and retry (for a set amount of time)	67	(173+41) 214
Nothing and don't retry	87	
Error message in console, nothing in UI	1	
Error message (but partly worked)	4	
Success message (but partly failed)	3	
Success message (but completely failed)	2	
Stuck loading state	9	
Generic error message	176	177
Good(ish?) error message	1	
Incorrectly says no [objects] exist	38	41
Error on 3rd party app (we don't control this)	3	
Not sure	73	73
	464	

vs.

Future UX Responses:

86% have *effective* error responses

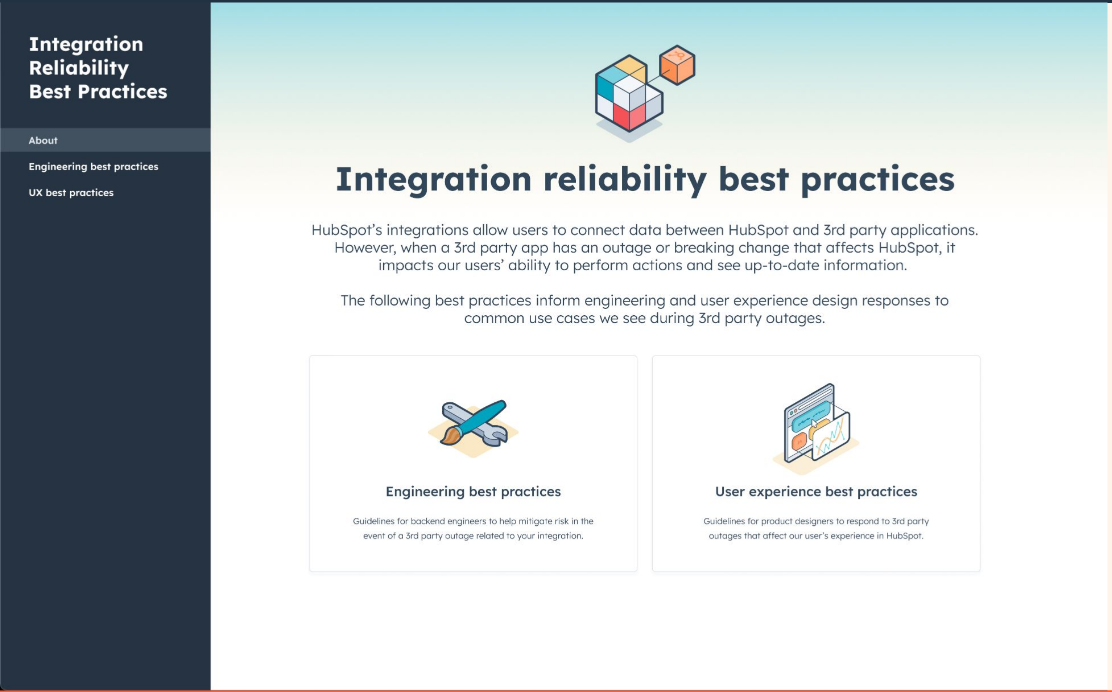


Future UX Responses	Totals	
Full page empty state	18	410
Half page empty state	1	
Contextual error alert + messaging	51	
Contextual warning alert + messaging	96	
Warning alert on settings page	93	
Error temporary alert	28	
Warning temporary alert	1	
Full page modal	5	
Error message (other)	86	
Workflows error	23	
Error in 3rd party app	8	
TBD - unsure of use case	65	65
	475	

Audit link

HubSpot

Which brings us to today!



Integration Reliability Best Practices

Integration reliability best practices

HubSpot's integrations allow users to connect data between HubSpot and 3rd party applications. However, when a 3rd party app has an outage or breaking change that affects HubSpot, it impacts our users' ability to perform actions and see up-to-date information.

The following best practices inform engineering and user experience design responses to common use cases we see during 3rd party outages.

Engineering best practices

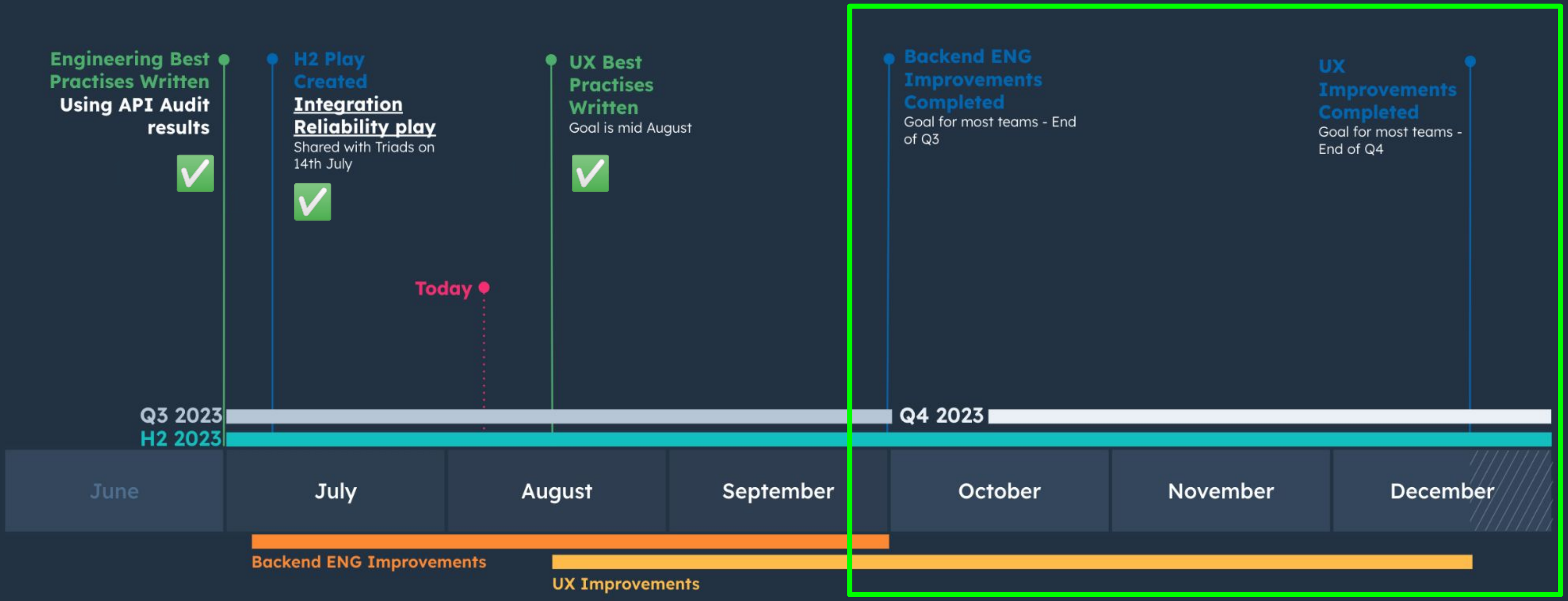
Guidelines for backend engineers to help mitigate risk in the event of a 3rd party outage related to your integration.

User experience best practices

Guidelines for product designers to respond to 3rd party outages that affect our user's experience in HubSpot.

1. ✅ Current state audit
2. ✅ Market research
3. ✅ Build baseline best practices
4. ✅ Analyze and categorize API UX responses
5. ✅ Create best practices to solve for +80% of use cases
6. ✅ Create a single source of truth for both eng and UX best practices

Next steps



Engineering Best Practises Written
Using API Audit results
✓

H2 Play Created
Integration Reliability play
Shared with Triads on 14th July
✓

UX Best Practises Written
Goal is mid August
✓

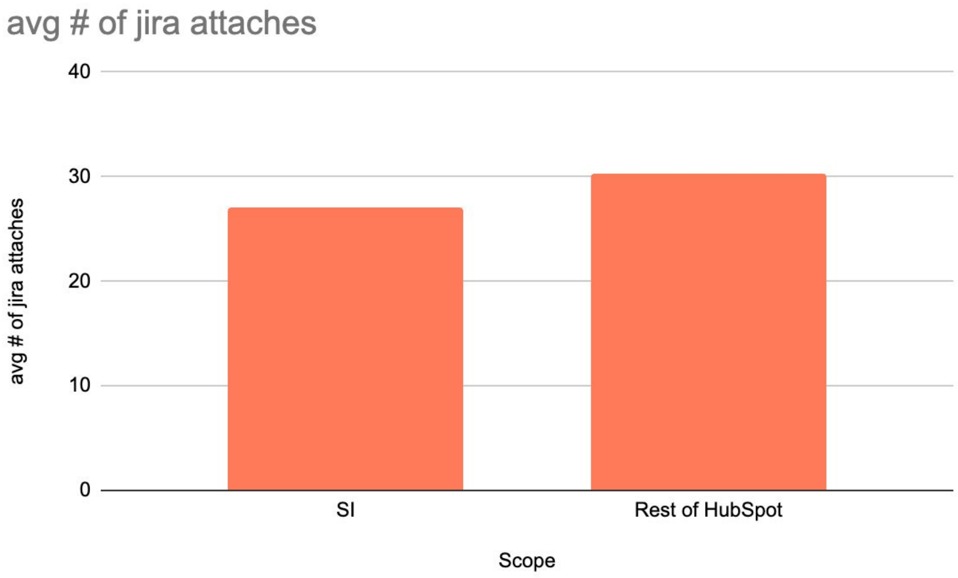
Backend ENG Improvements Completed
Goal for most teams - End of Q3

UX Improvements Completed
Goal for most teams - End of Q4

Today

Success metrics

We will compare our baseline number of Jira attaches related to SI outages to future numbers.



Thank you