Mastering Visual Communication

for Software Development

Jacqui Read

Principal Consultant
@ Read the Architecture
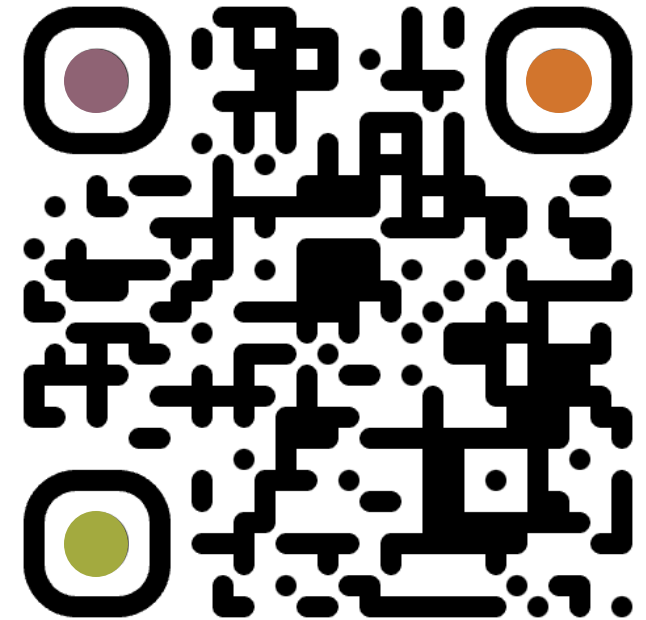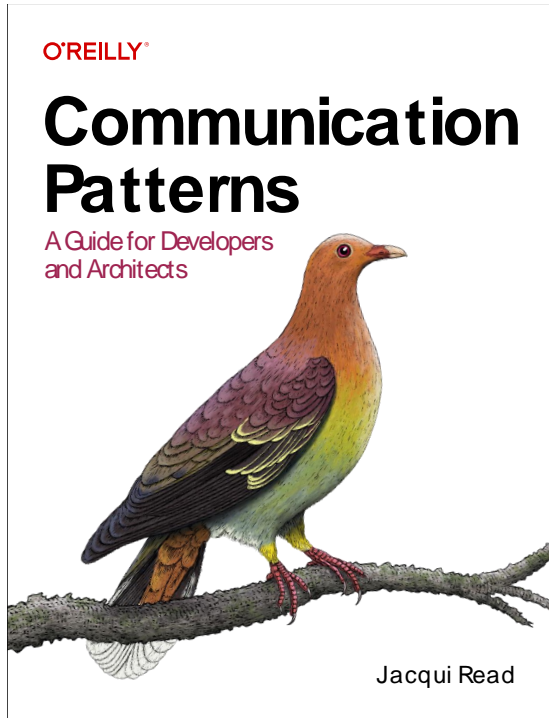Author of *Communication Patterns*

JacquiRead.com

linkedin.com/in/jacquelineread

fosstodon.org/@tekiegirl

Jacqui Read

Principal Consultant
@ Read the Architecture
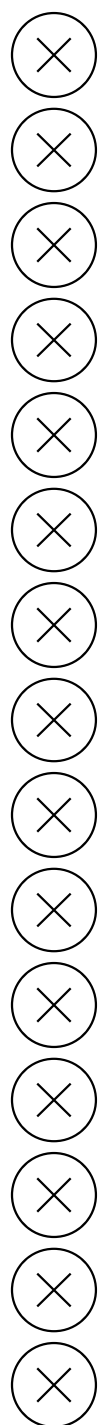Author of *Communication Patterns*

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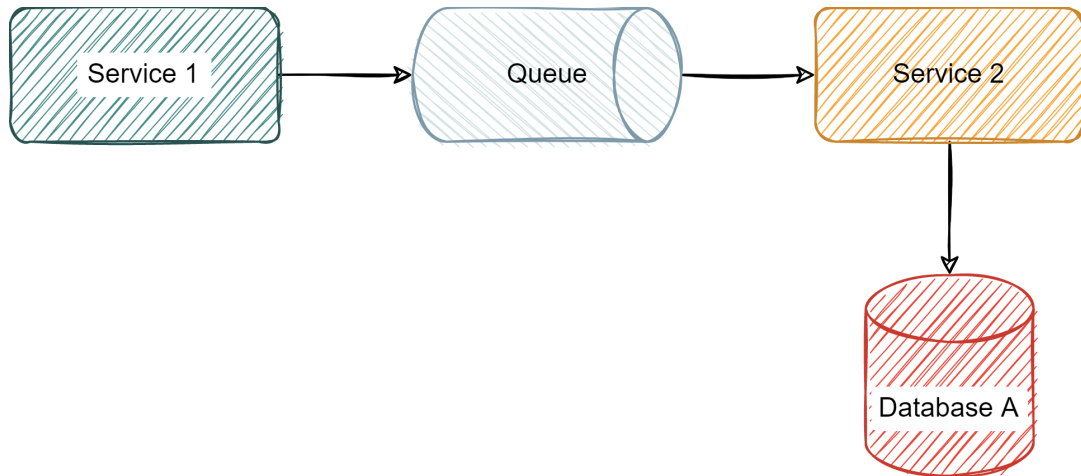
fosstodon.org/@tekiegirl

Effective visual communication

Patterns & Antipatterns

Avoid diagram pitfalls and deliver impact

Style Communicates
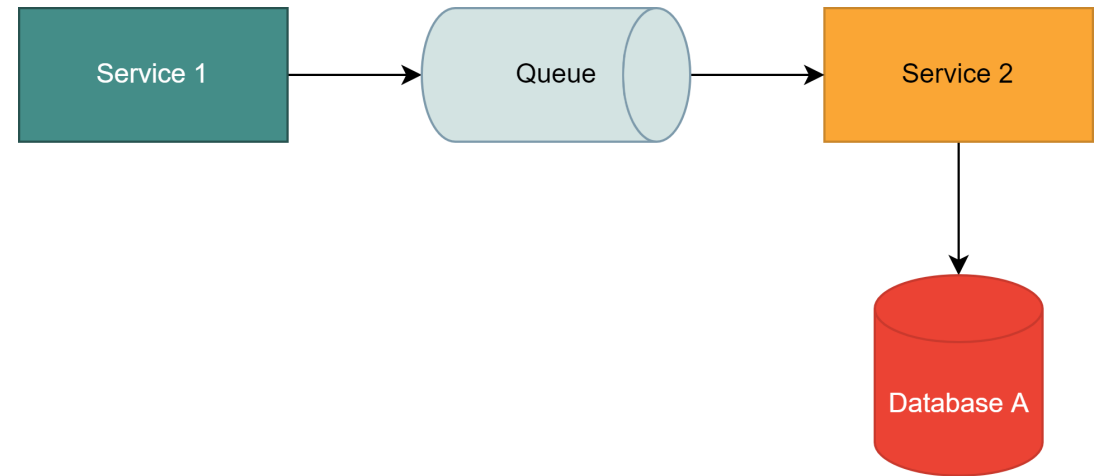
Use style to visually communicate to your audience

Style Communicates
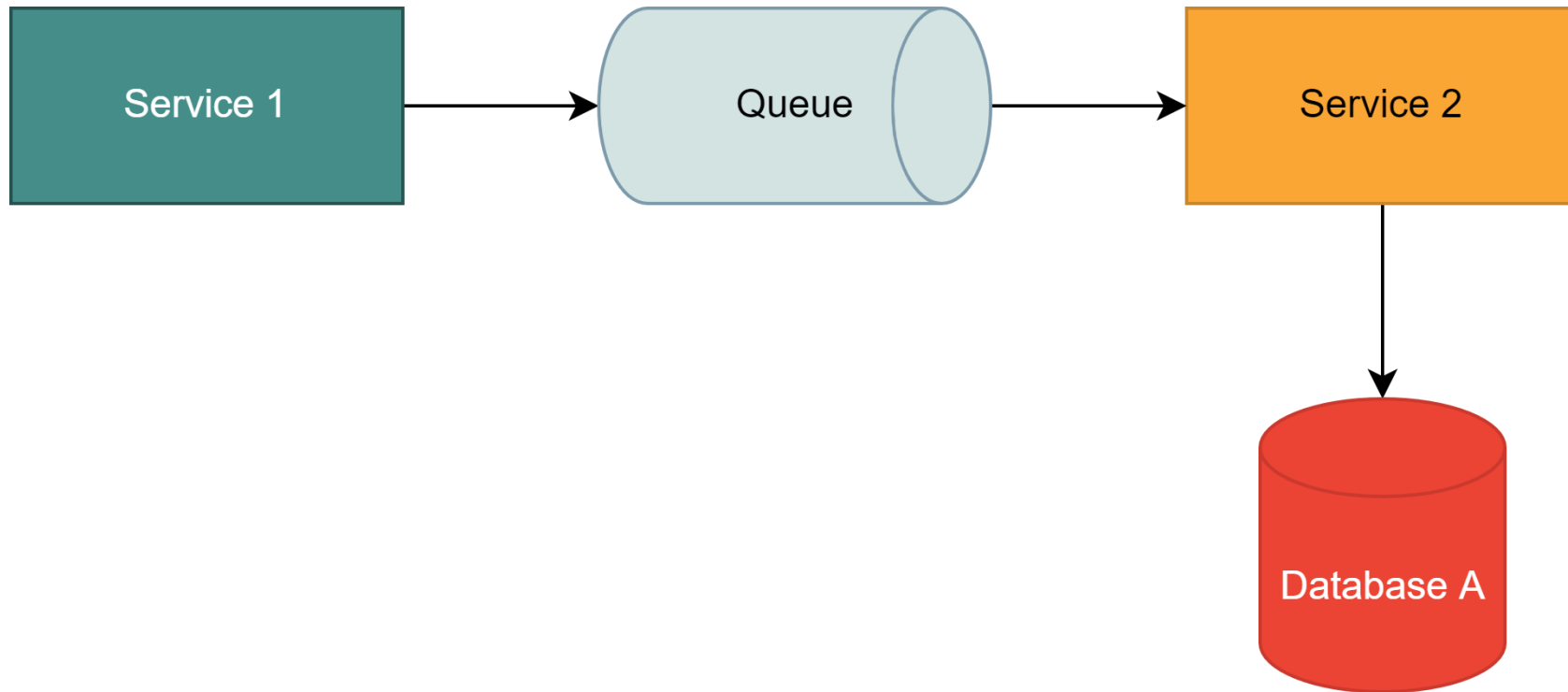
Style Communicates
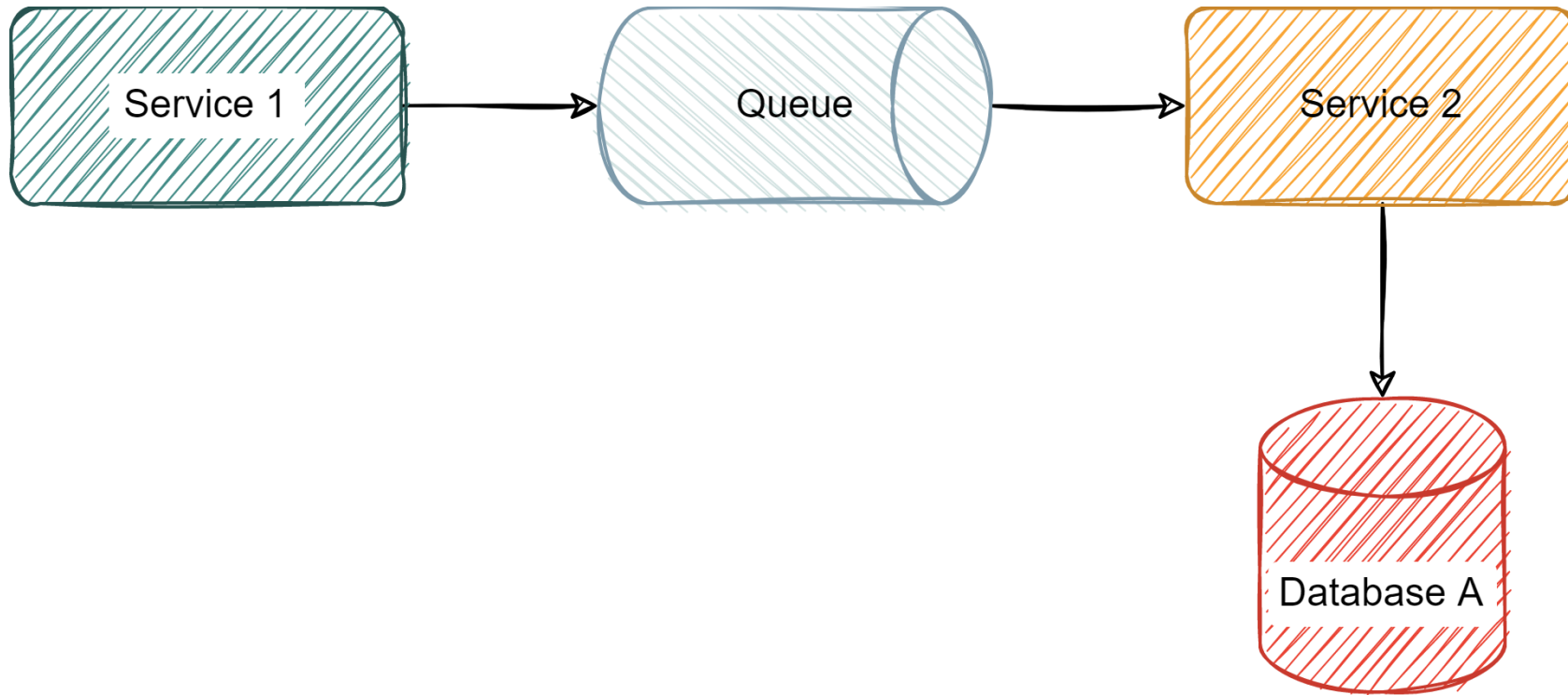
Meta Style

AKA: using style to communicate

Use style to your advantage

Avoid miscommunication

Which style is correct?

1
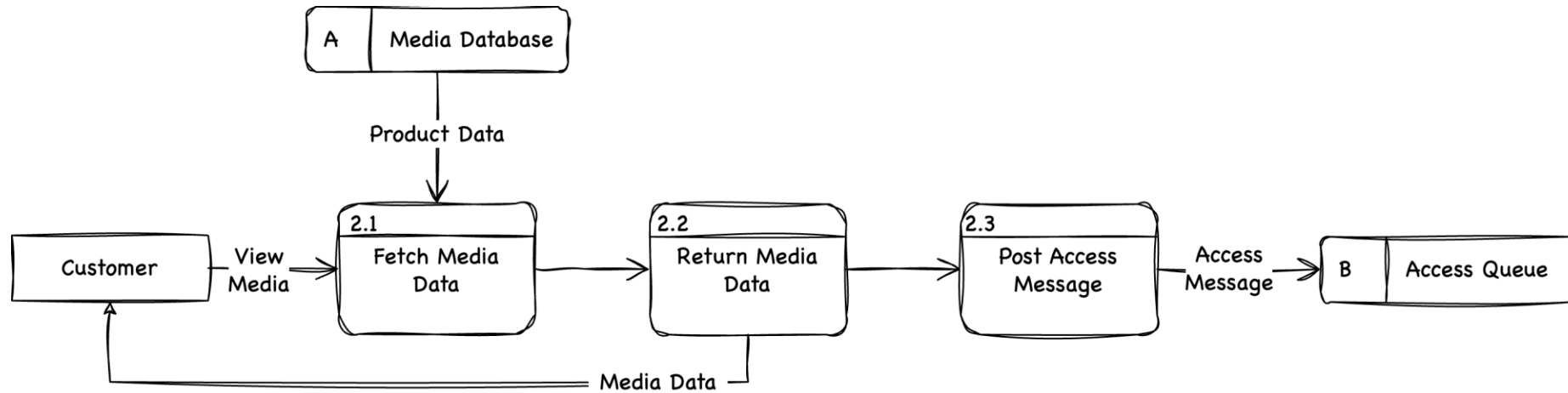
Polyglot Media
Data Flow Diagram: media search, view and access analytics - 2. Fetch Media

2
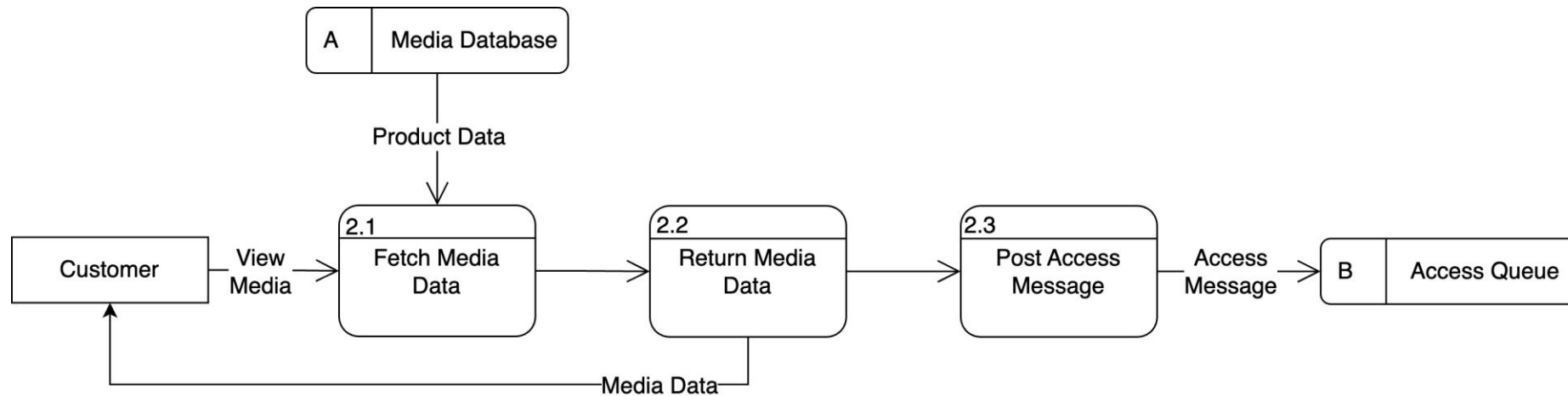
Polyglot Media
Data Flow Diagram: media search, view and access analytics - 2. Fetch Media

Face in the Crowd

AKA: know your audience

Different audiences need different levels of detail and different types of diagram
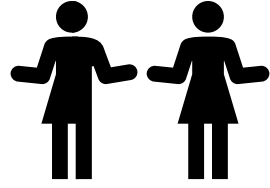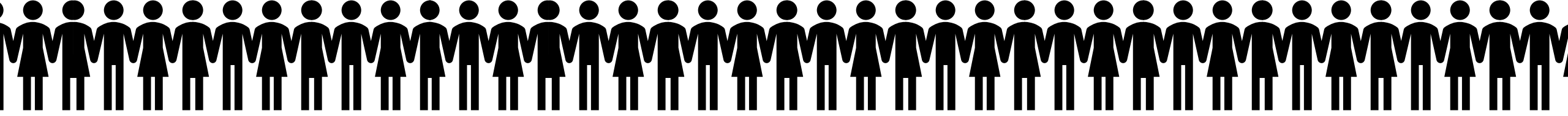
Who is your diagram for?
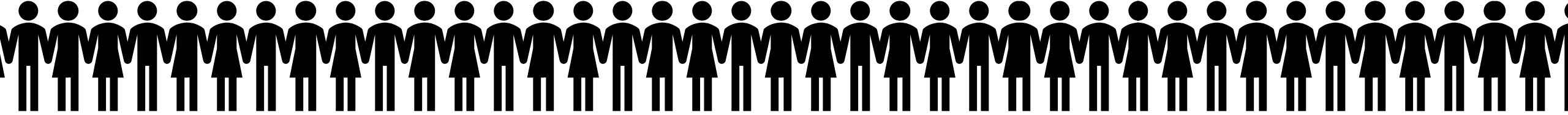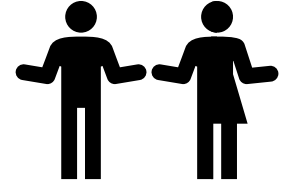
Think about these

What is their technical understanding?

Think about these

What is their technical understanding?

What level of detail do they need?

Think about these

What is their technical understanding?

What level of detail do they need?

What do they want from you?

Think about these

What is their technical understanding?

What level of detail do they need?

What do they want from you?

What do you want from them?

Who is this for?
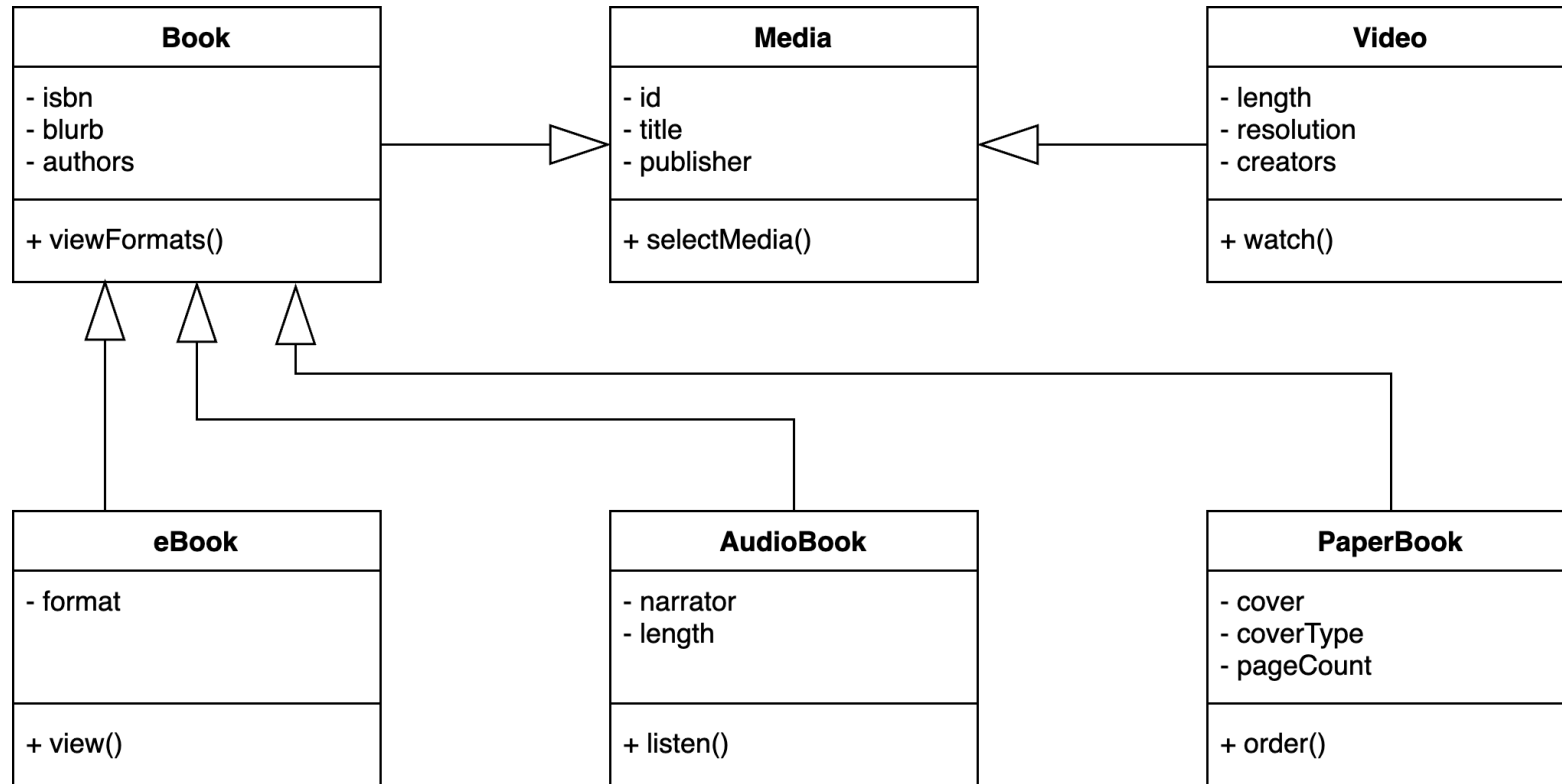
Media
Class Diagram

Who is this for?

Author
[Person]

Person who creates content for Polyglot Media

Editor
[Person]

An employee of Polyglot Media

publishes media content using

manages and edits media using

Payment System
[Software System]

External payment system used by the Polyglot Media system

Polyglot Media
[Software System]

Online system belonging to Polyglot Media Ltd.

External Media API
[Software System]

API to search and gain access to media content external to Polyglot Media

takes payments using

accesses external media data using

searches and accesses media using

Customer
[Person]

A customer of the products of Polyglot Media

System Context Diagram for Polyglot Media
Showing the high-level interactions with the Polyglot Media system.

Multi-Storey Diagram

AKA: mixing levels of abstraction

⊗⊗⊗⊗⊗⊗⊗⊗⊗⊗⊗⊗⊗⊗⊗⊗⊗⊗⊗⊗⊗⊗⊗⊗⊗⊗⊗⊗⊗
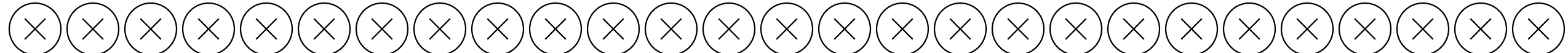
A 'Sin' in Coding

Presentation
Business
Persistence
Database

Presentation
Application
Domain
Infrastructure

Levels of Abstraction in Architecture

C_4

Context

Container

Component

Code

Levels of Abstraction in Architecture

What's wrong here?

Payment System
[Software System]

External payment system used by the Polyglot Media system

Payment Interface
[Container: TBC]

Service interface with the external payment system

Customer
[Person]

A customer of the products of Polyglot Media

Activity Queue
[Container : RabbitMQ]

Queue for Activity

takes payments using

takes payments using

searches and accesses media using

writes activity to

retrieves activity from

External Media API
[Software System]

API to search and gain access to media content external to Polyglot Media

External Media Interface
[Container: TBC]

Service interface with the external media API

Polyglot Media
[Software System]

Online system belonging to Polyglot Media Ltd.

Activity Datastore Writer
[Container: TBC]

Service to write media activity to the Activity Datastore

accesses external media data using

looks up external media data using

reads data from

reads activity data from

writes activity to

Media Datastore
[Container : MongoDB]

Storage for media data

Activity Datastore
[Container : Event Store DB]

Storage for media activity

Container Diagram for Customers using Polyglot Media
Showing the high-level interactions within the Polyglot Media system.

Context Diagram

Author
[Person]

Person who creates content
for Polyglot Media

Editor
[Person]

An employee of Polyglot Media

publishes media
content using

manages and edits
media using

Payment System
[Software System]

External payment system used by
the Polyglot Media system

Polyglot Media
[Software System]

Online system belonging to
Polyglot Media Ltd.

External Media API
[Software System]

API to search and gain access to media
content external to Polyglot Media

takes
payments
using

accesses
external media
data using

searches and accesses
media using

Customer
[Person]

A customer of the products
of Polyglot Media

System Context Diagram for Polyglot Media
Showing the high-level interactions with the Polyglot Media system.

Container Diagram

Customer
[Person]

A customer of the products of Polyglot Media

searches and accesses media using

Customer UI
[Container : Angular]

Customer user interface

Activity Queue
[Container : RabbitMQ]

Queue for Activity

writes activity to

retrieves activity from

requests data from

takes payments using

Payment Interface
[Container: TBC]

Service interface with the external payment system

takes payments using

Customer API
[Container: TBC]

API for Customer Actions

Activity Datastore Writer
[Container: TBC]

Service to write media activity to the Activity Datastore

writes activity to

Payment System
[Software System]

External payment system used by the Polyglot Media system

requests data from

reads activity data from

Activity Datastore
[Container : Event Store DB]

Storage for media activity

External Media API
[Software System]

API to search and gain access to media content external to Polyglot Media

accesses external media data using

External Media Interface
[Container: TBC]

Service interface with the external media API

looks up external media data using

Media Service
[Container: TBC]

Service for searching and accessing media

reads data from

Media Datastore
[Container : MongoDB]

Storage for media data

Polyglot Media
[Software System]

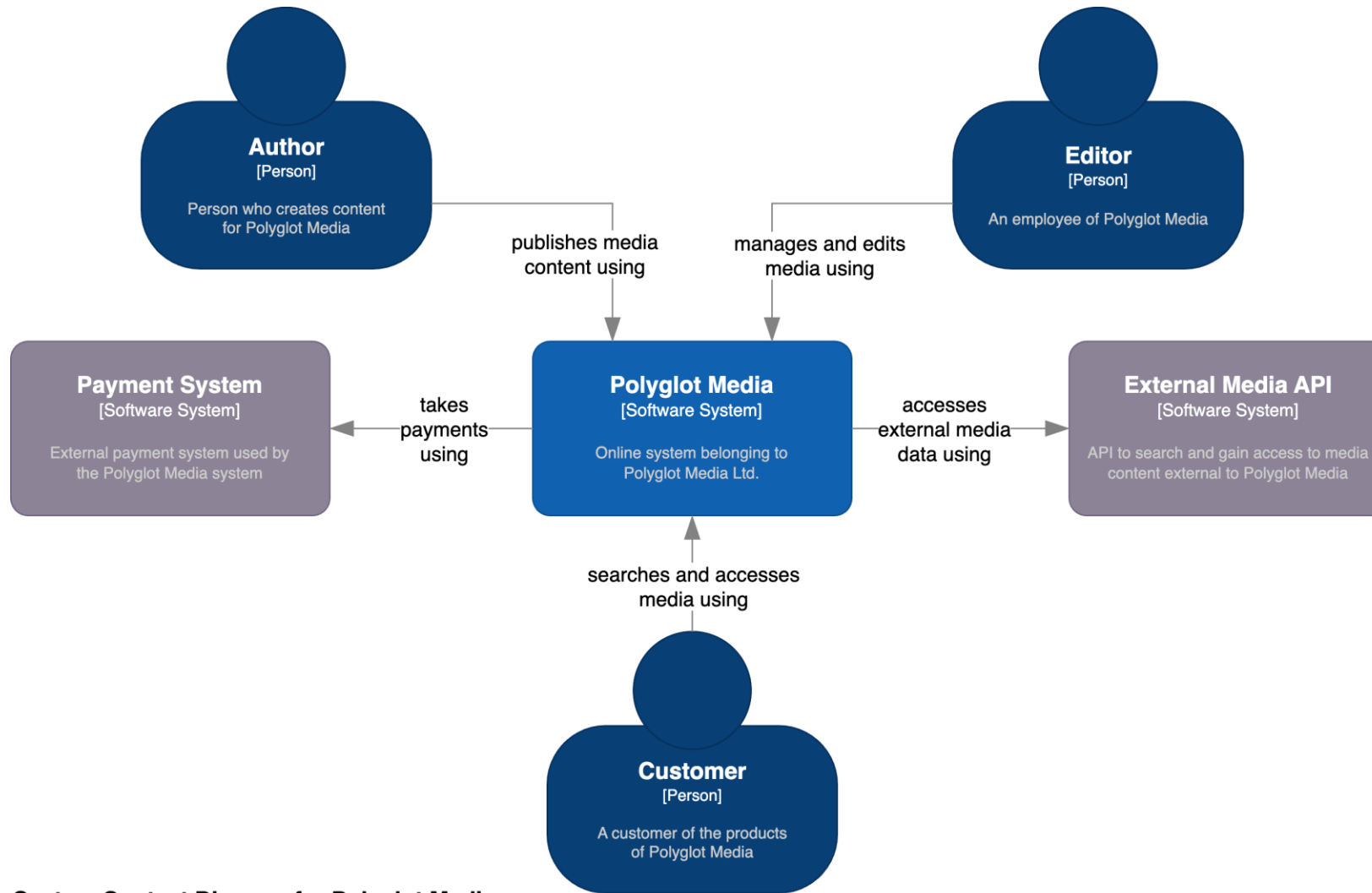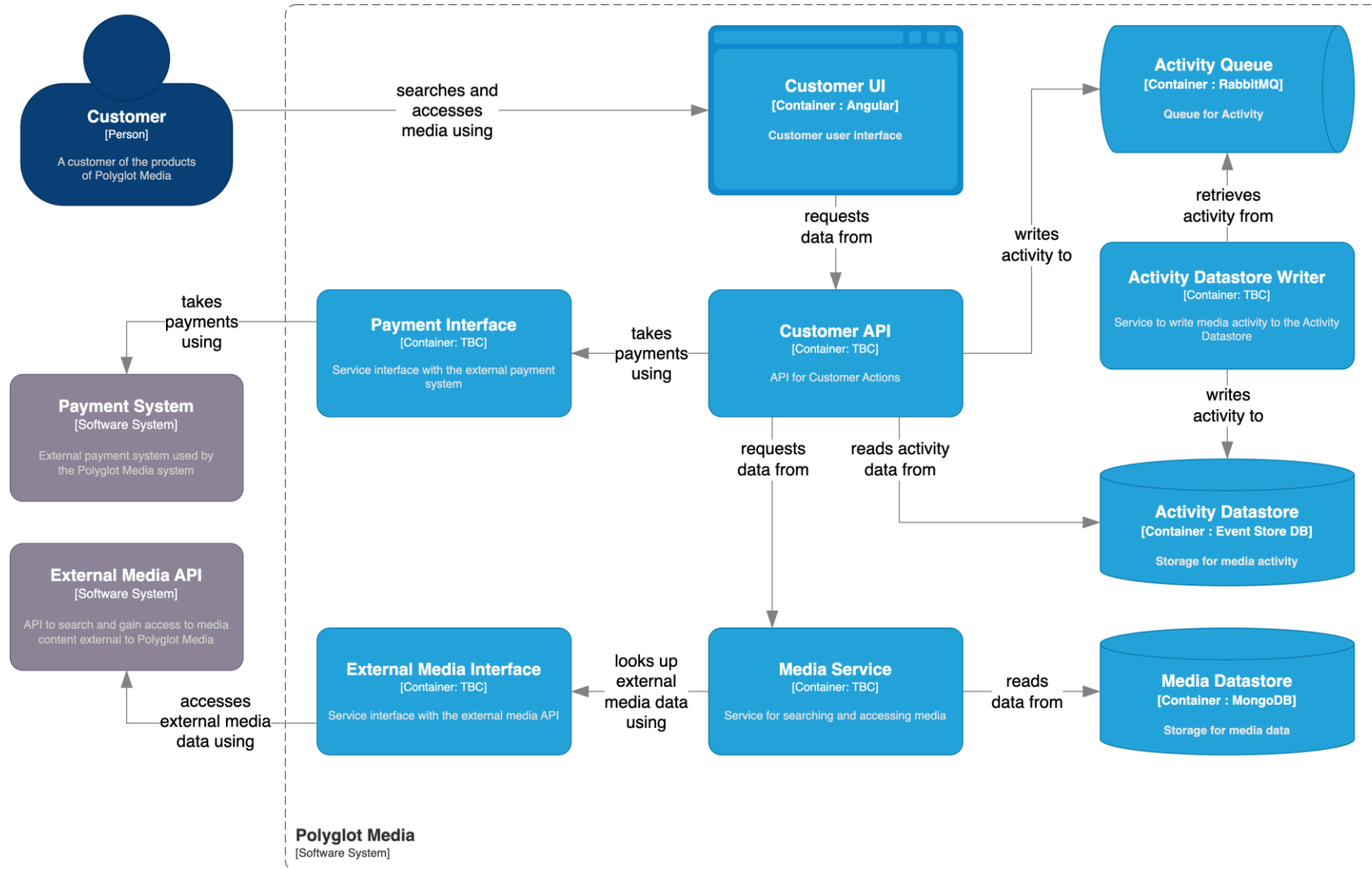**Container Diagram for Customers using Polyglot Media**
Showing the high-level interactions within the Polyglot Media system.

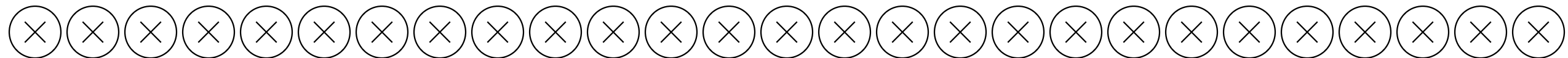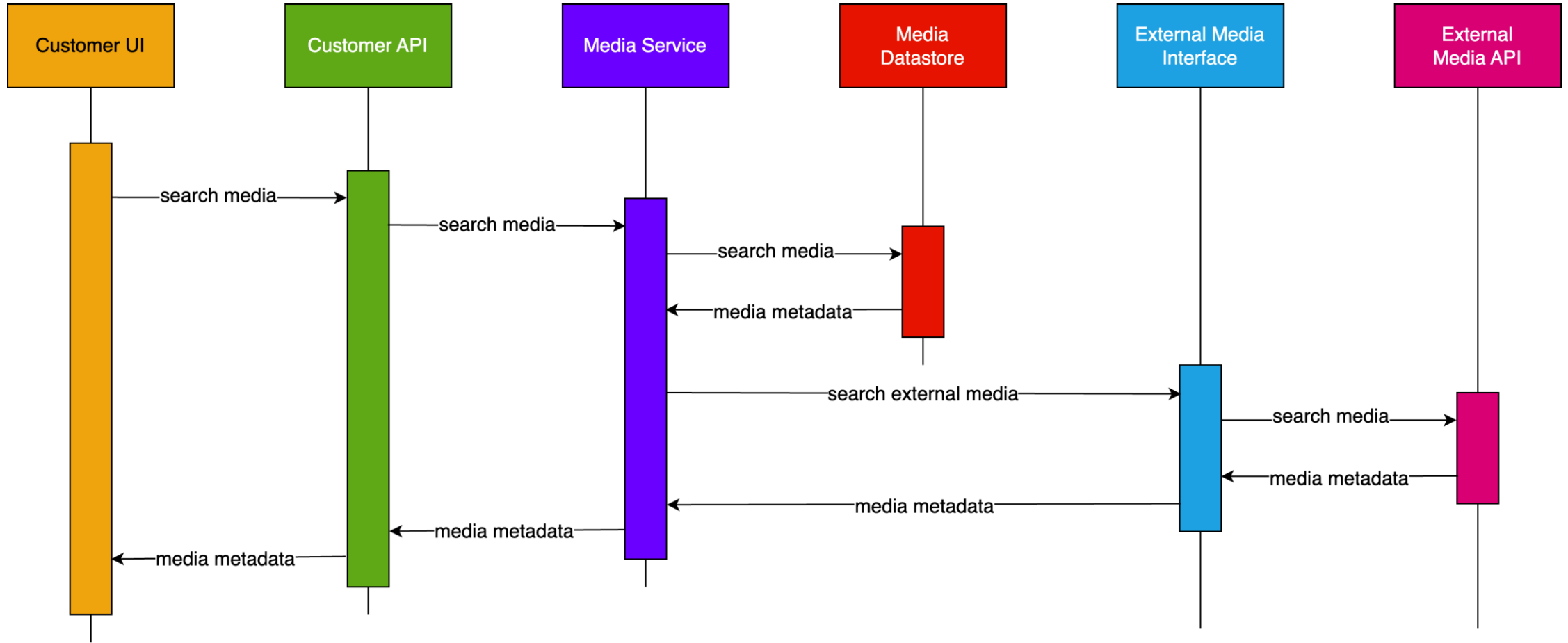# Mixing levels of abstraction causes confusion
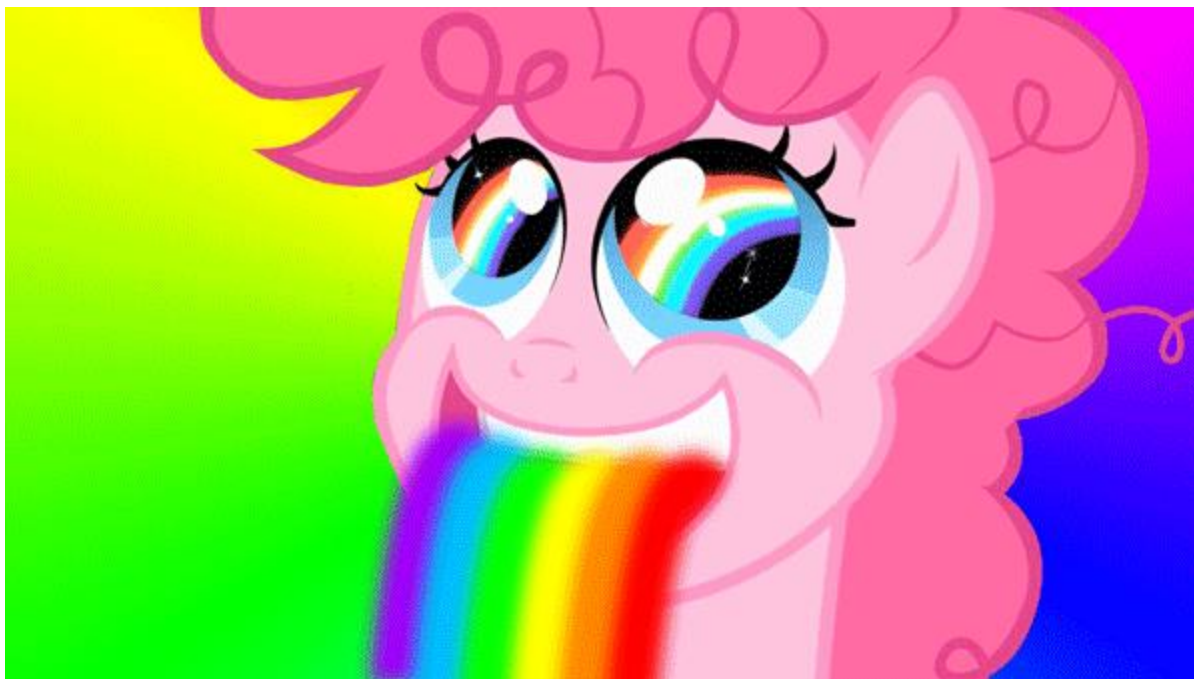
Explosion of Unicorns

🦄

AKA: Too many colours

⊗⊗⊗⊗⊗⊗⊗⊗⊗⊗⊗⊗⊗⊗⊗⊗⊗⊗⊗⊗⊗⊗⊗⊗⊗⊗⊗⊗⊗⊗⊗⊗

Rainbow Flow

Customer UI → Customer API: search media
Customer API → Media Service: search media
Media Service → Media Datastore: search media
Media Datastore → Media Service: media metadata
Media Service → External Media Interface: search external media
External Media Interface → External Media API: search media
External Media API → External Media Interface: media metadata
External Media Interface → Media Service: media metadata
Media Service → Customer API: media metadata
Customer API → Customer UI: media metadata

Polyglot Media
Media search process, internal and external media

Minimise your colour palette

Group by type or function
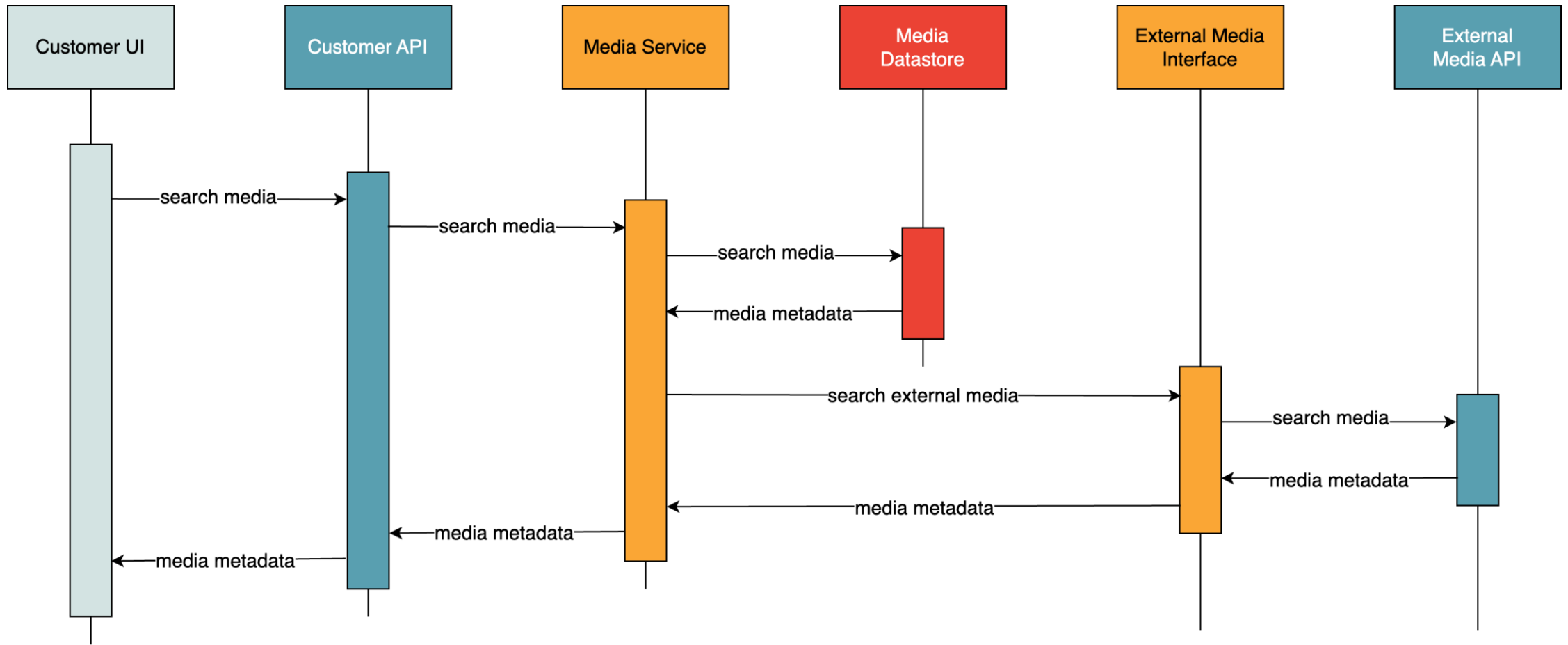
Polyglot Media
Media search process, internal and external media

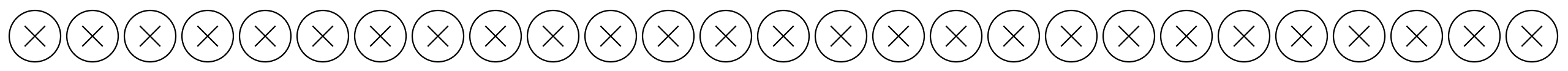Key: | User Interface | Application Programming Interface | Service/Interface | Datastore |

Use colour to aid communication

Colour is Key

🎨 🔑

AKA: relying on colour to communicate

Can you pass me the yellow one?
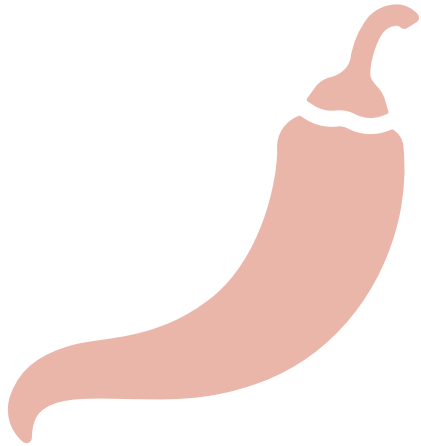
a　　　b　　　c　　　d

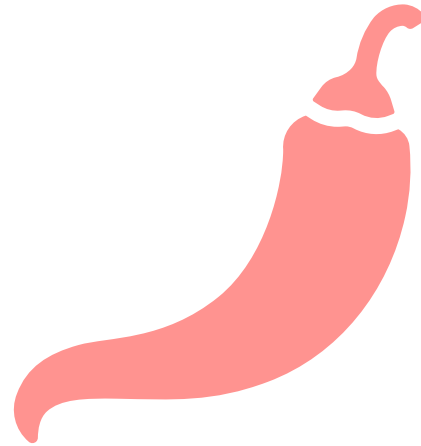Simulated Protanopia

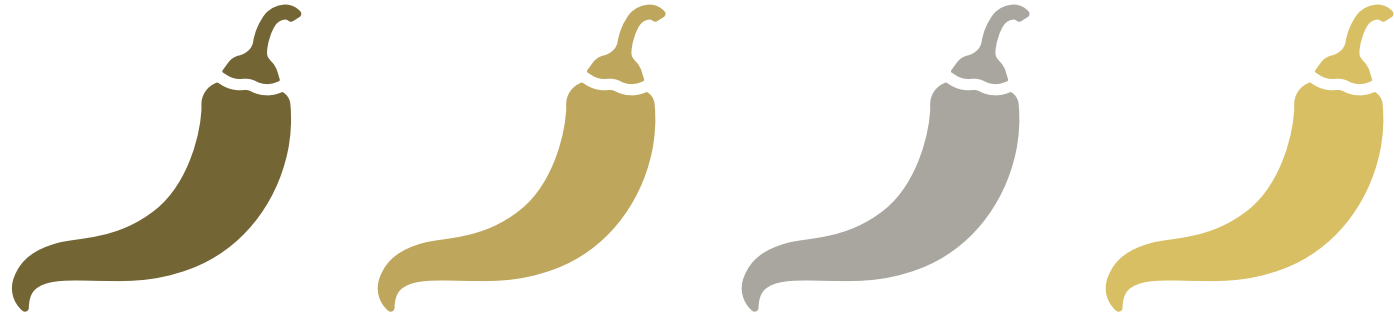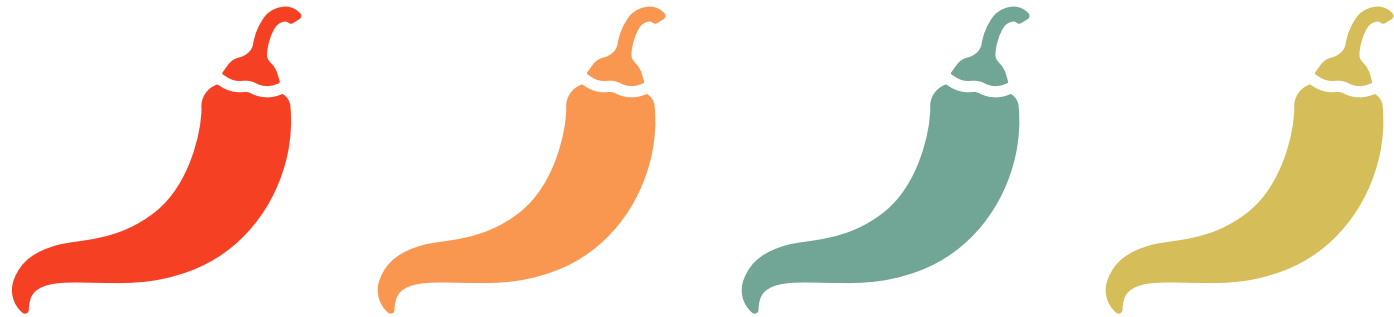# Can you pass me the yellow one?

e   f   g   h

Simulated Tritanopia

Can you pass me the yellow one?

Protanomaly

Deuteranomaly

Tritanomaly

Protanopia

Deuteranopia

Tritanopia

Achromatopsia

Approximately 4.5% of the world's population is colour vision deficient

1 in 12 men &
1 in 200 women
are colour blind

More than 350 million people worldwide

ECOSIA

rainbow

News ≡

Q All 🖾 Images 📄 News ▷ Videos ⊙ Maps ⋮ More

Settings

Normal
Protanopia
Protanomaly
Deuteranopia
Deuteranomaly
✓ Tritanopia
Tritanomaly
Achromatopsia
Achromatomaly
Low-Contrast

Search region: United Kingdom ∨   All sizes ∨   All colors ∨   All types ∨   Any time ∨   All layouts ∨   All usage rights ∨

God's Rainbow | Rainbow Color Art | Rainbow Drawing | Awesome Rainbow Art | Fire Rainbow | Rainbow Candy | Rainbow Fabric | Rainbow Kids | Rainbow Stuff | Rainbow Neon Lights | Pretty Rainbow ＞

The rainbow's colors in Cottontail Fizz are in t...
www.reddit.com

The Rainbow | ferrebeekeeper
ferrebeekeeper.wordpress.com

Rainbow Sky | By popular d...
www.flickr.com

Big Horn Rainbow...
fineartamerica.com

A Full Double Rainbow - Burnsland - Photo...
www.burnsland.com

Rainbow ~ Jineral Knowledge
jineralknowledge.com

There is a common element in the pass...
www.democraticunderground.com

Double Rainbow | First time to spot a double...
www.flickr.com

301 Moved Permanently
rainbowveins44.wordpress.com

Strange and mysterio...
strangesounds.org

Striking Double Rainbow Photograph by Brent Thomas
fineartamerica.com

Ravishing Rainbow...
www.boredart.com

Colorful Rainbow Photos | AmO
amolife.com

The 14 Most Beautiful Rainbow Photos...
www.mostbeautifulthings.net

The Rainbow Connection—To Physics
www.sciencefriday.com

Bill's Log: A Rainbow of Pro...
bills-log.blogspot.com

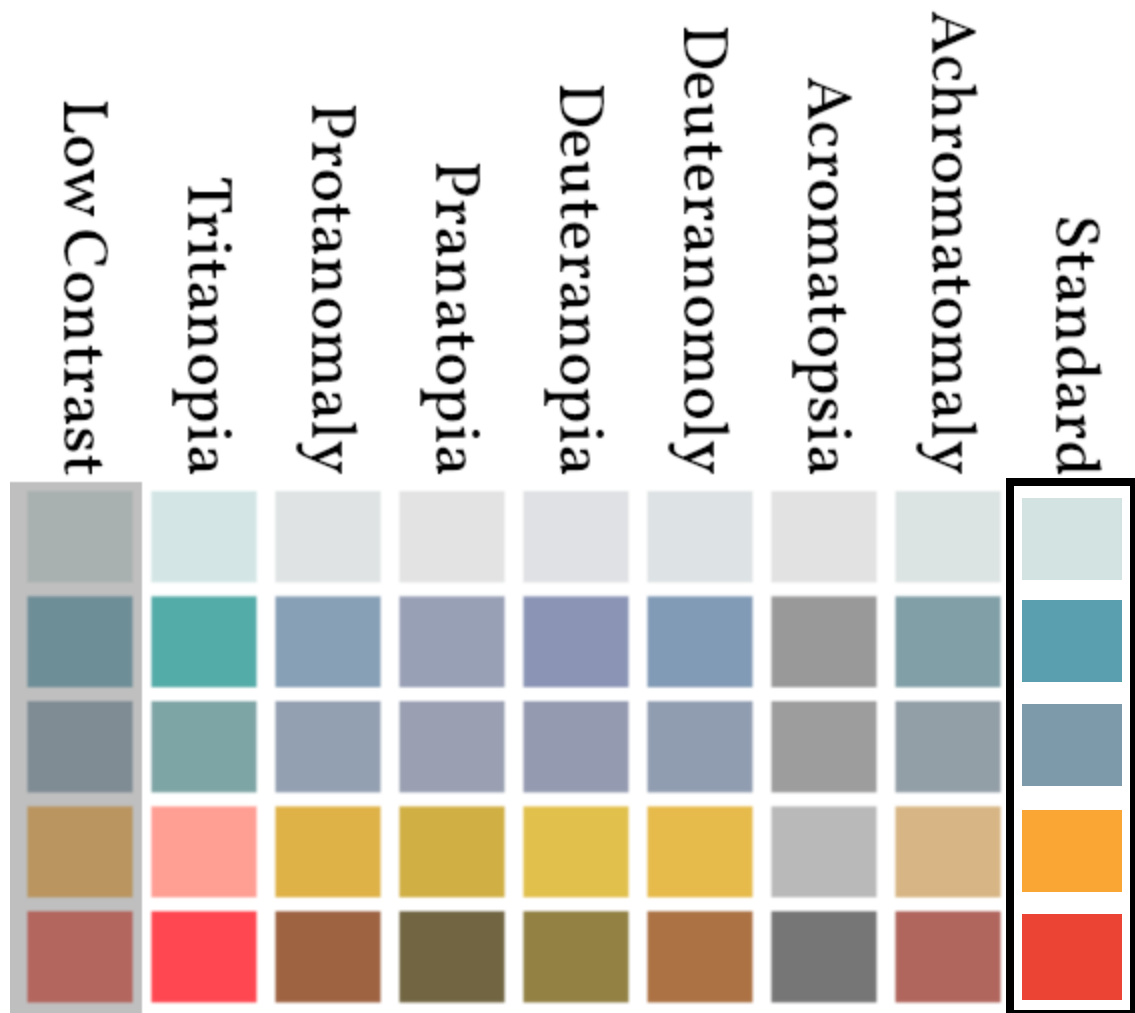Amazing rainbow! : Adelaide
www.reddit.com

What causes a double rainbow? | The Weather Guys
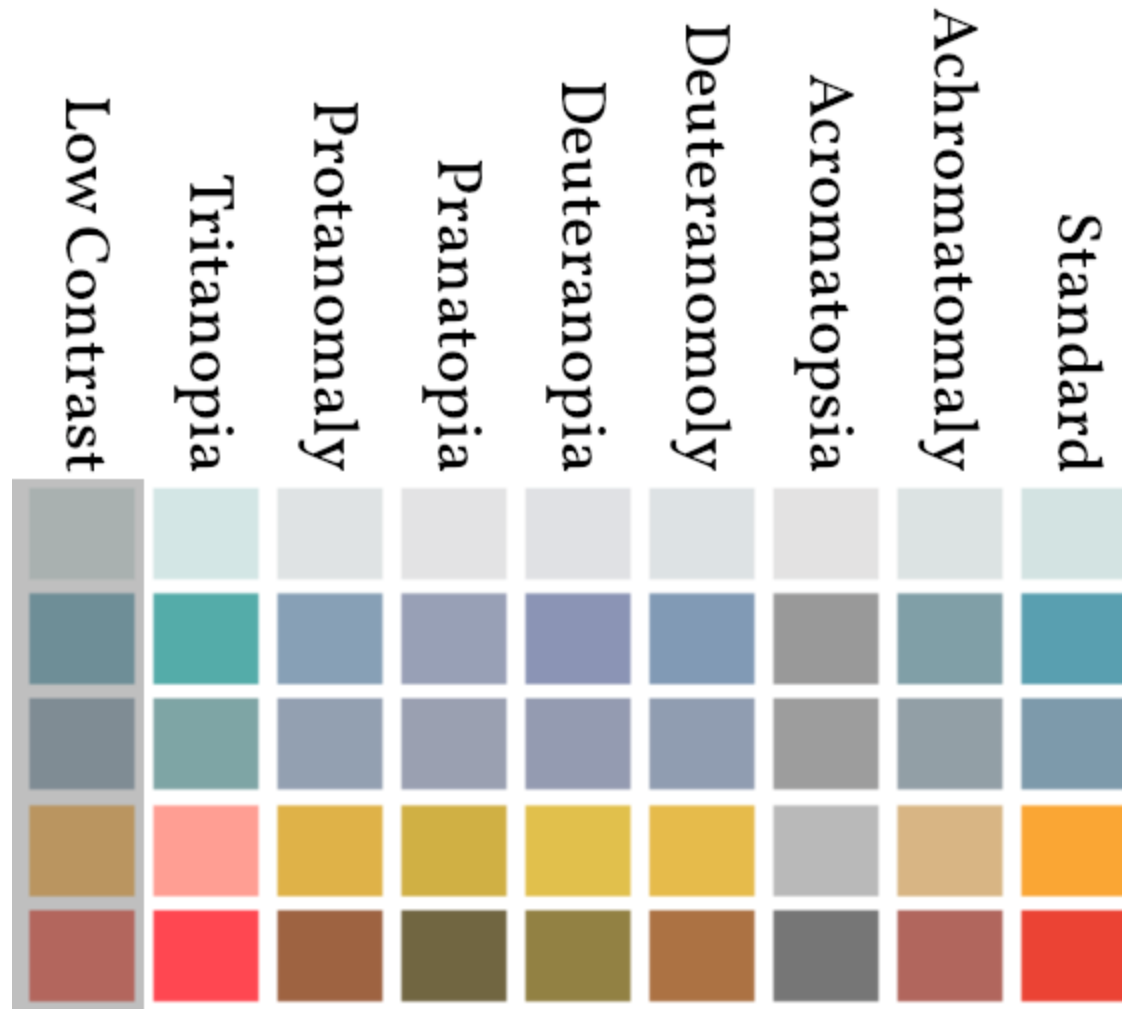wxguys.ssec.wisc.edu

A palette I created

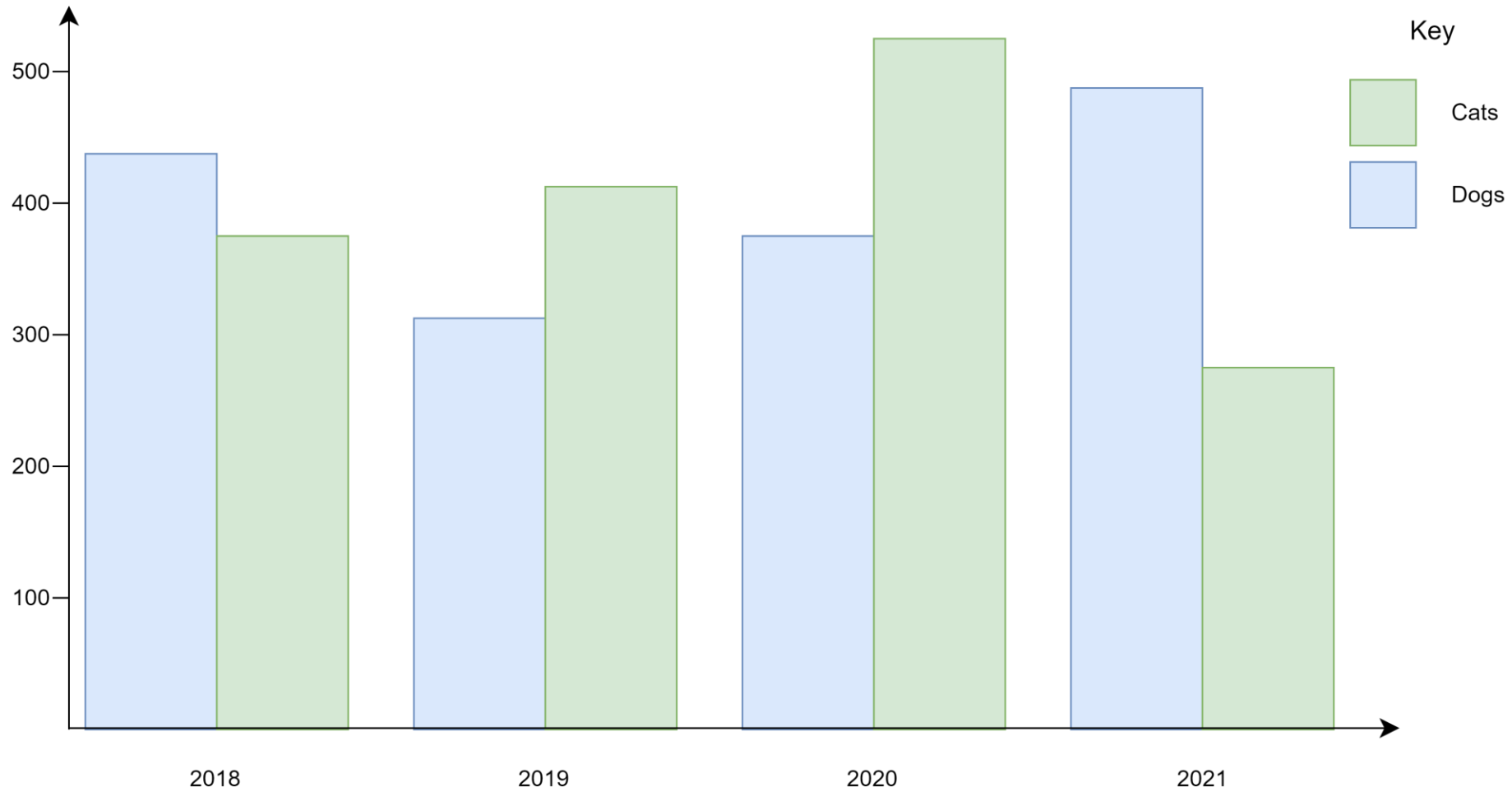# A pallet I created

A palette I created

An accessible palette I created

Use a colour-blind simulator

Colour is key?

What about greyscale?
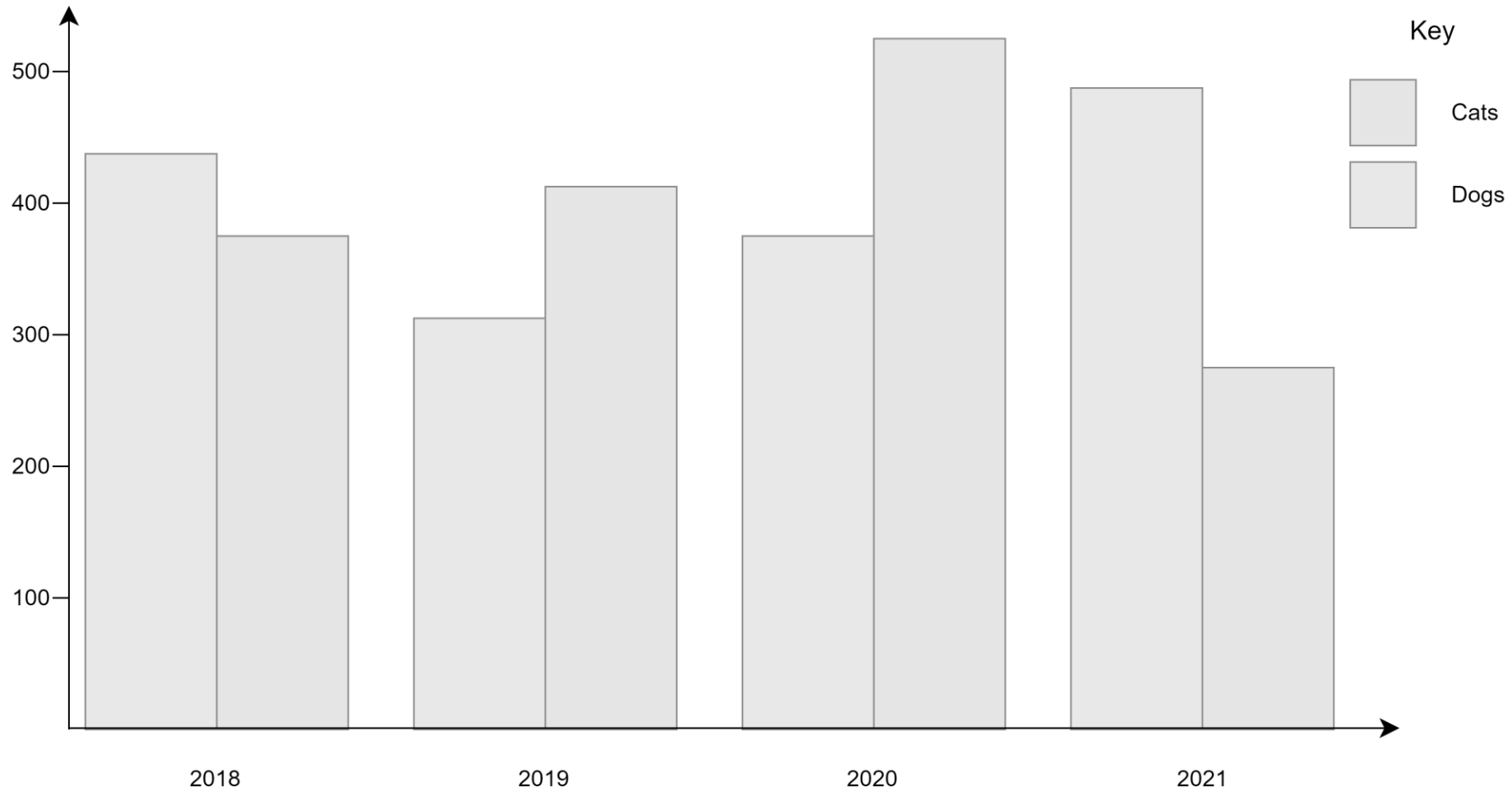
Use pattern
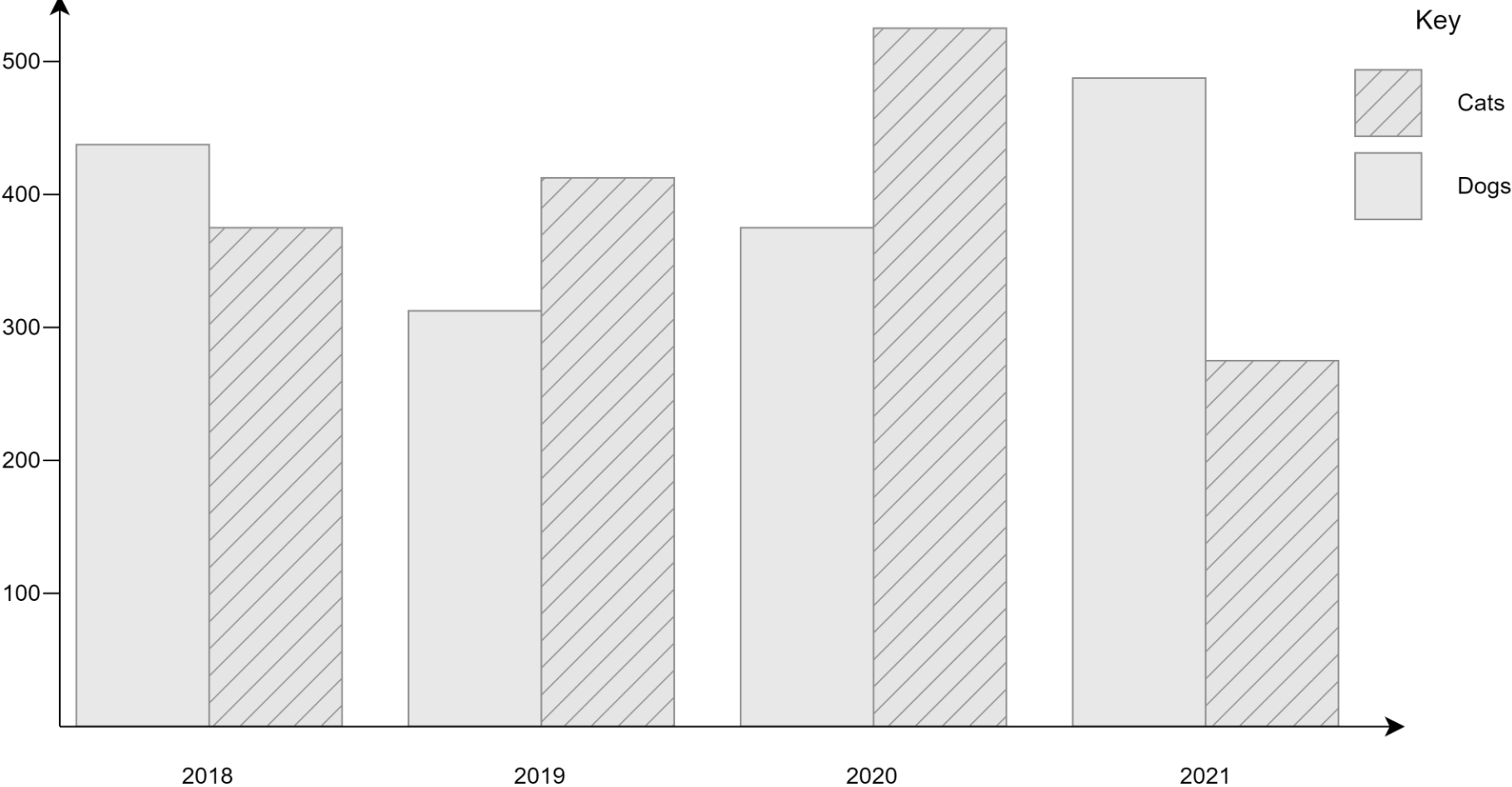
Use symbols

Don't rely on colour alone

MLAH

AKA: Multiple-Letter Acronym Hell

⊗⊗⊗⊗⊗⊗⊗⊗⊗⊗⊗⊗⊗⊗⊗⊗⊗⊗⊗⊗⊗⊗⊗⊗⊗⊗⊗⊗⊗⊗⊗⊗
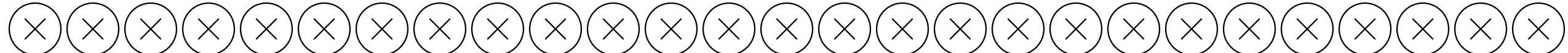
Only use defined acronyms

Do

In speech, say the acronym,
and say the definition straight afterwards

Do

In speech, say the acronym,
and say the definition straight afterwards

In written form, define the acronym the first time you write it, and/or in a key or glossary

A few acronyms you may know…

or not

DRY:

A few acronyms you may know...

or not

DRY:

Don't Repeat Yourself

DFD:

A few acronyms you may know...
or not

DRY:
Don't Repeat Yourself

DFD:
Data Flow Diagram

SPA:

A few acronyms you may know...
or not

DRY:
Don't Repeat Yourself

DFD:
Data Flow Diagram

SPA:
Single Page Application

BLT:

A few acronyms you may know…
or not

DRY:
Don't Repeat Yourself

DFD:
Data Flow Diagram

SPA:
Single Page Application

BLT:
Bacon Lettuce & Tomato

BLT?

Business Leadership Team

BLT?

Business Leadership Team   Basic Language Translator

BLT?

Business Leadership Team   Basic Language Translator

Bulk Loading Tool

BLT?

Business Leadership Team   Basic Language Translator

Bulk Loading Tool   Be Like That!

Acronyms can mean different things to different people

It's easy to fall into thinking that others have the same understanding as you

Next time you use an acronym...

think
SIDI

Next time you use an acronym...

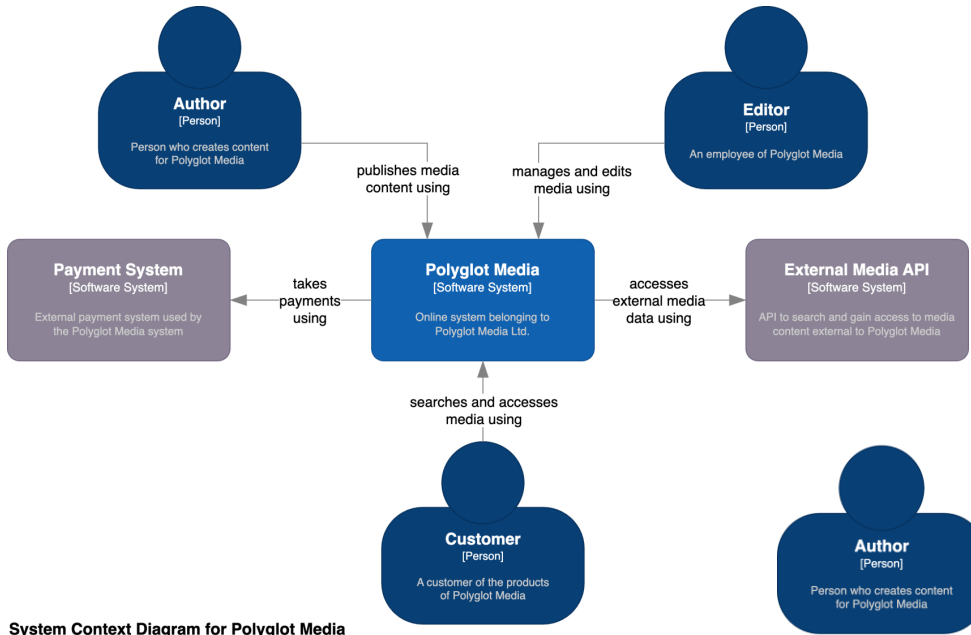think
SIDI

State It

Define It

🤣 🤣

Connect the Dots

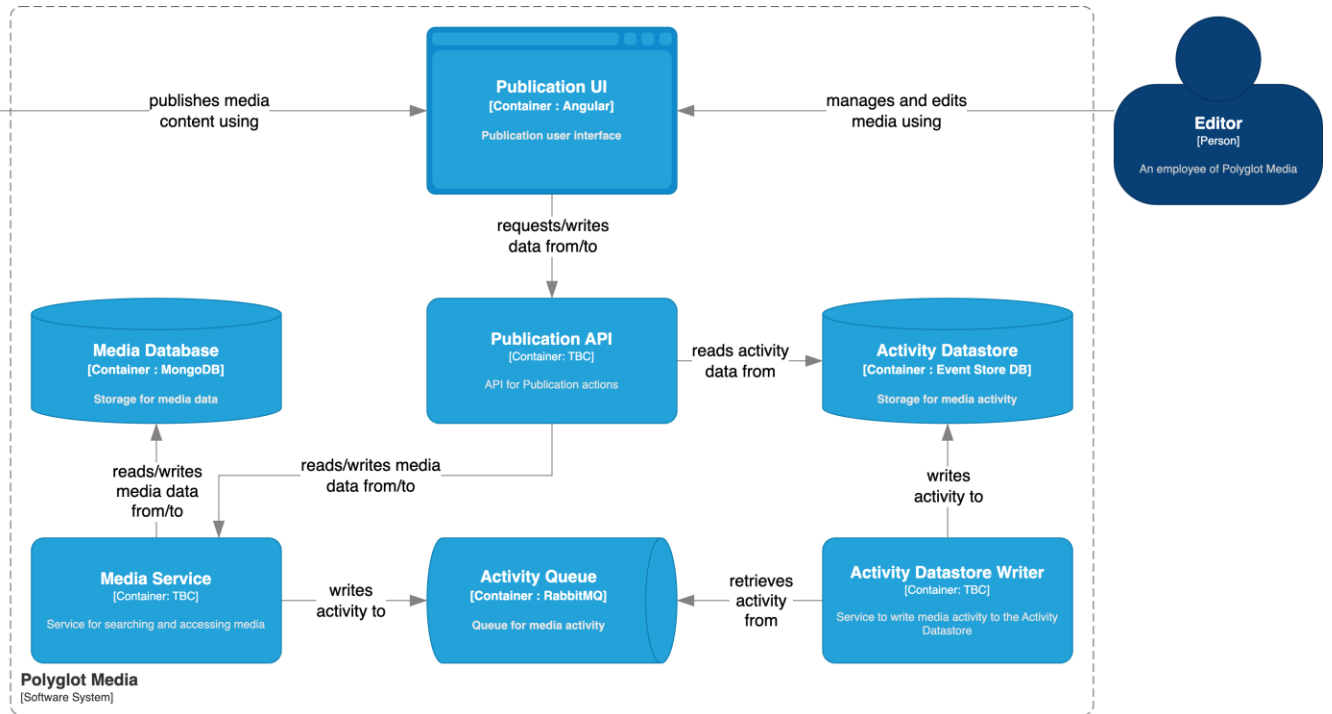## AKA: Representational Consistency – connecting levels of abstraction

☑☑☑☑☑☑☑☑☑☑☑☑☑☑☑☑☑☑☑☑☑☑☑☑☑☑☑

Navigating between levels of abstraction must be easy

C4 Levels

Author
[Person]

Person who creates content for Polyglot Media

Editor
[Person]

An employee of Polyglot Media

publishes media content using

manages and edits media using

Payment System
[Software System]

External payment system used by the Polyglot Media system

takes payments using

Polyglot Media
[Software System]

Online system belonging to Polyglot Media Ltd.

accesses external media data using

External Media API
[Software System]

API to search and gain access to media content external to Polyglot Media

searches and accesses media using

Customer
[Person]

A customer of the products of Polyglot Media

System Context Diagram for Polyglot Media
Showing the high-level interactions with the Polyglot Media system.

Author
[Person]

Person who creates content for Polyglot Media

publishes media content using

Publication UI
[Container : Angular]

Publication user interface

manages and edits media using

Editor
[Person]

An employee of Polyglot Media

requests/writes data from/to

Media Database
[Container : MongoDB]

Storage for media data

Publication API
[Container : TBC]

API for Publication actions

reads activity data from

Activity Datastore
[Container : Event Store DB]

Storage for media activity

reads/writes media data from/to

reads/writes media data from/to

writes activity to

Media Service
[Container: TBC]

Service for searching and accessing media

writes activity to

Activity Queue
[Container : RabbitMQ]

Queue for media activity

retrieves activity from

Activity Datastore Writer
[Container: TBC]

Service to write media activity to the Activity Datastore

Polyglot Media
[Software System]

Container Diagram for Publications in Polyglot Media
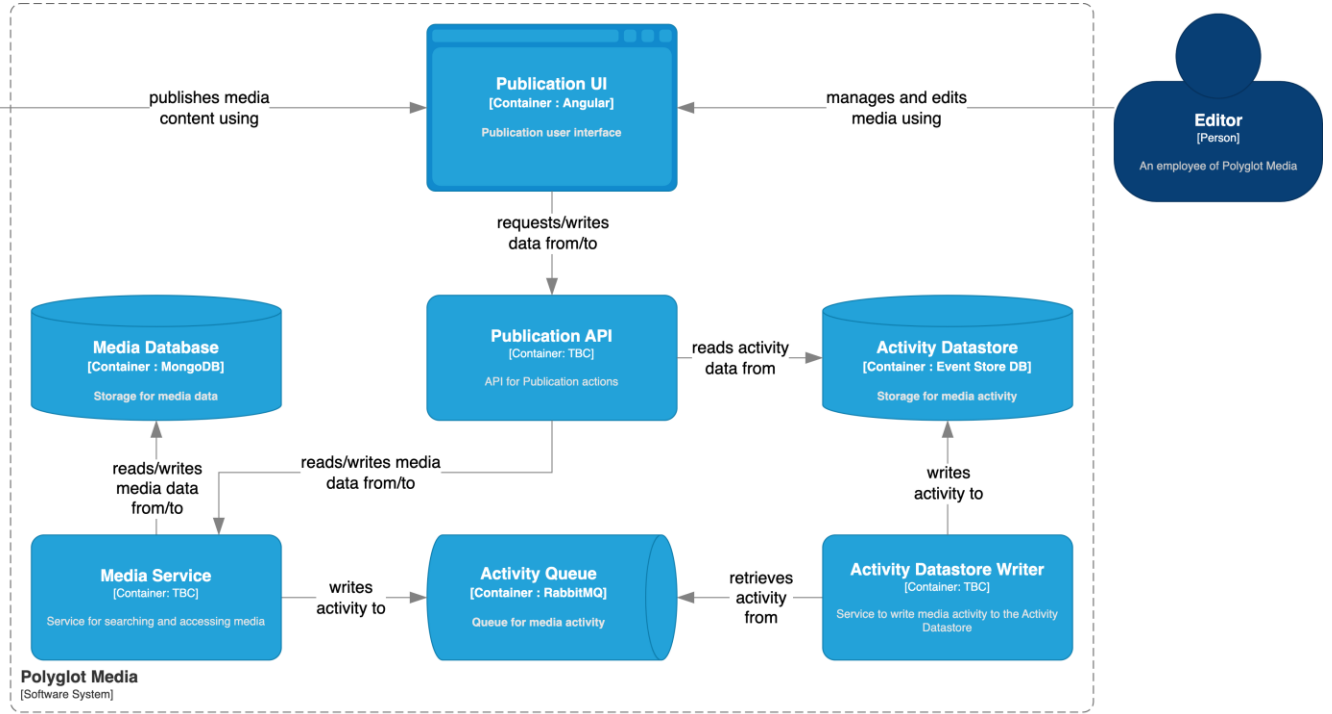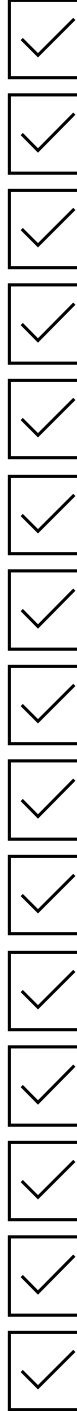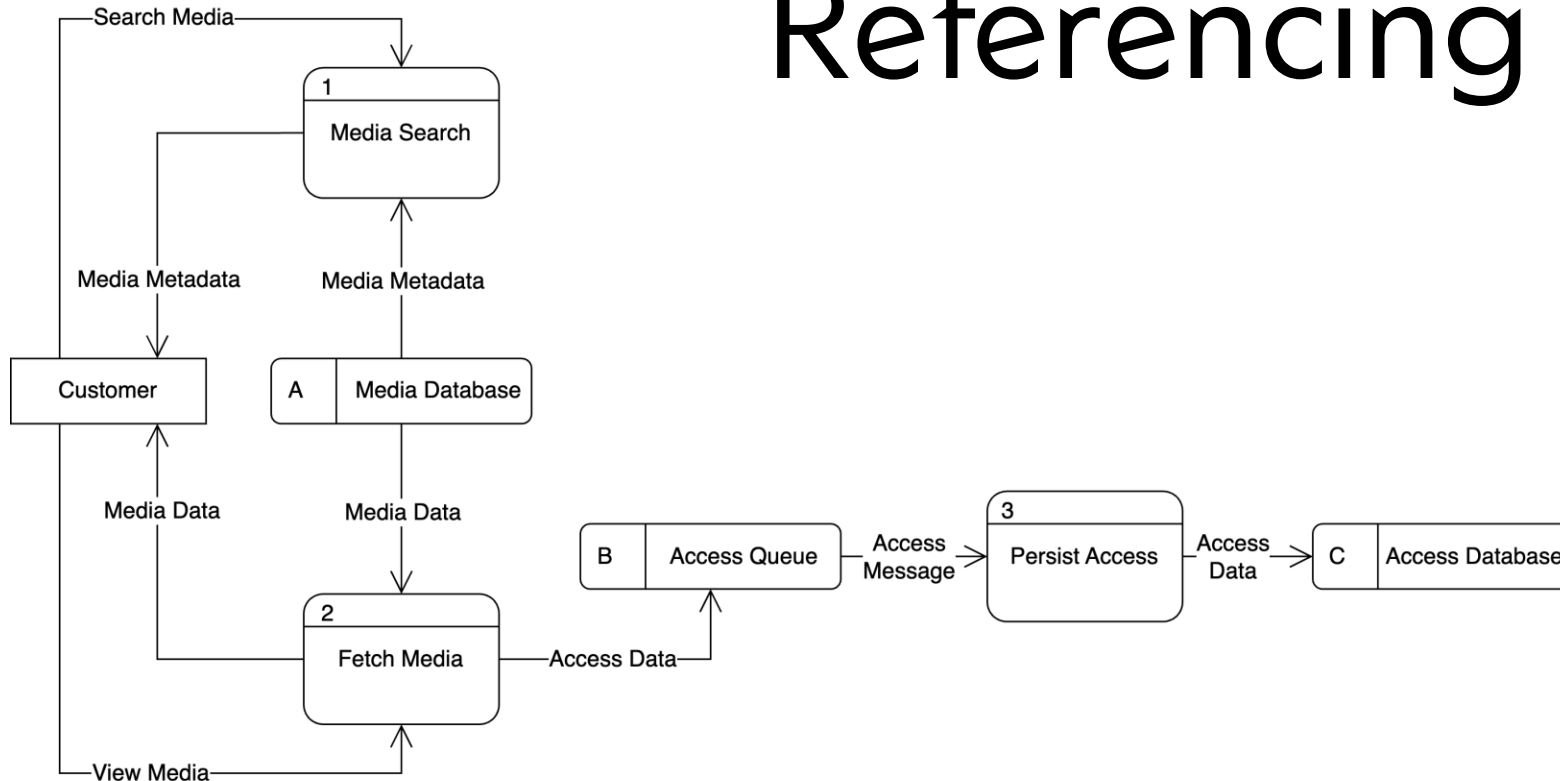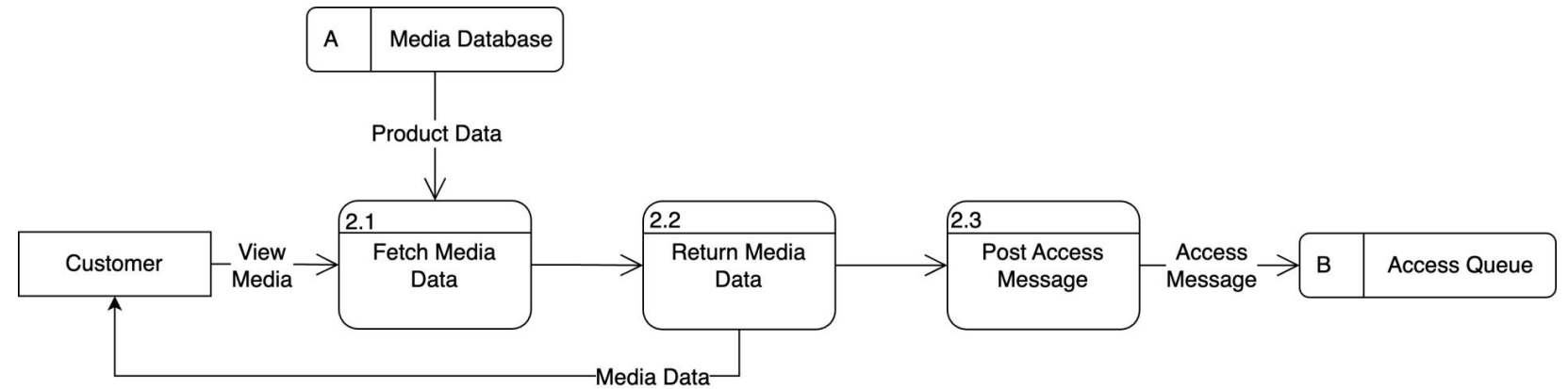Showing the high-level interactions within the Polyglot Media system.

C4 Levels

System Context Diagram for Polyglot Media
Showing the high-level interactions with the Polyglot Media system.

Author
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Person who creates content for Polyglot Media

Editor
[Person]
An employee of Polyglot Media

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[Software System]
External payment system used by the Polyglot Media system

Polyglot Media
[Software System]
Online system belonging to Polyglot Media Ltd.

External Media API
[Software System]
API to search and gain access to media content external to Polyglot Media

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[Person]
A customer of the products of Polyglot Media

publishes media content using

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takes payments using

accesses external media data using

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Author
[Person]
Person who creates content for Polyglot Media

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Publication user interface

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[Person]
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Storage for media data

Publication API
[Container : TBC]
API for Publication actions

reads activity data from

Activity Datastore
[Container : Event Store DB]
Storage for media activity

reads/writes media data from/to

reads/writes media data from/to

writes activity to

Media Service
[Container: TBC]
Service for searching and accessing media

writes activity to

Activity Queue
[Container : RabbitMQ]
Queue for media activity

retrieves activity from

Activity Datastore Writer
[Container: TBC]
Service to write media activity to the Activity Datastore

Polyglot Media
[Software System]

Container Diagram for Publications in Polyglot Media
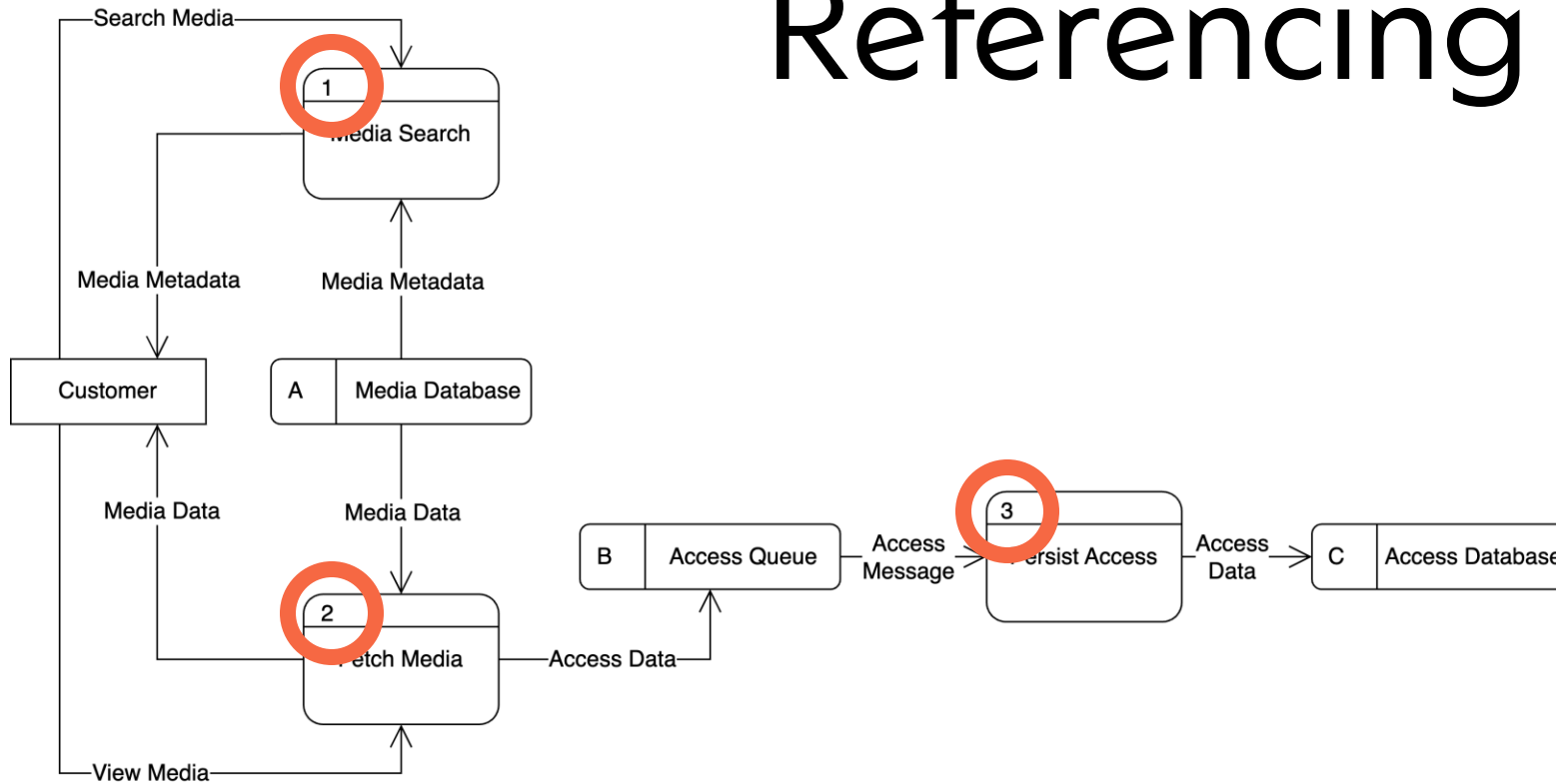Showing the high-level interactions within the Polyglot Media system.

Referencing

Search Media

1
Media Search

Media Metadata

Media Metadata

Customer

A | Media Database

Media Data

Media Data

B | Access Queue — Access Message → **3** Persist Access — Access Data → C | Access Database

2
Fetch Media — Access Data

View Media

Polyglot Media
Data Flow Diagram: media search, view and access analytics

A | Media Database

Product Data

Customer — View Media → **2.1** Fetch Media Data → **2.2** Return Media Data → **2.3** Post Access Message — Access Message → B | Access Queue

Media Data

Polyglot Media
Data Flow Diagram: media search, view and access analytics - 2. Fetch Media
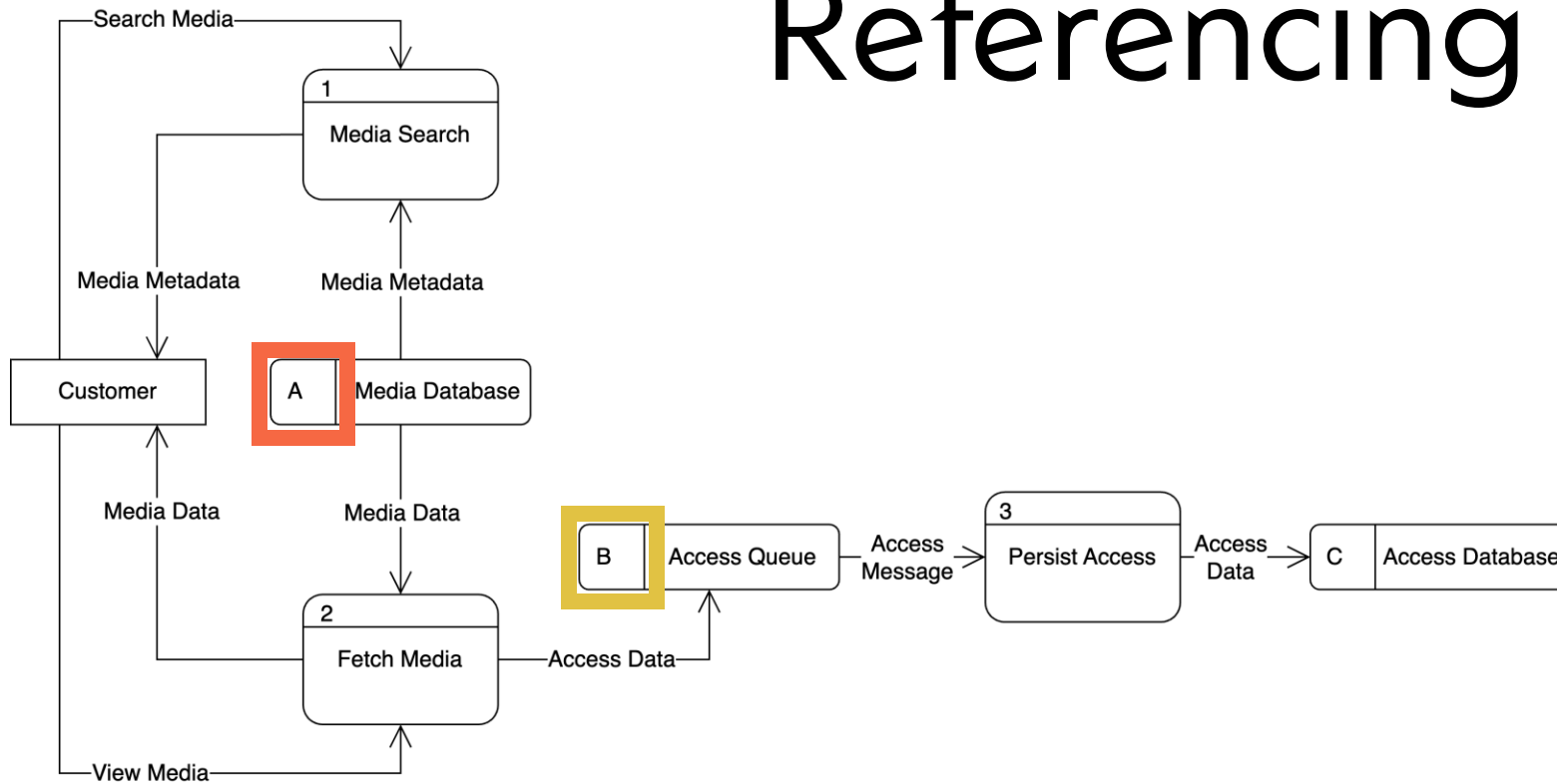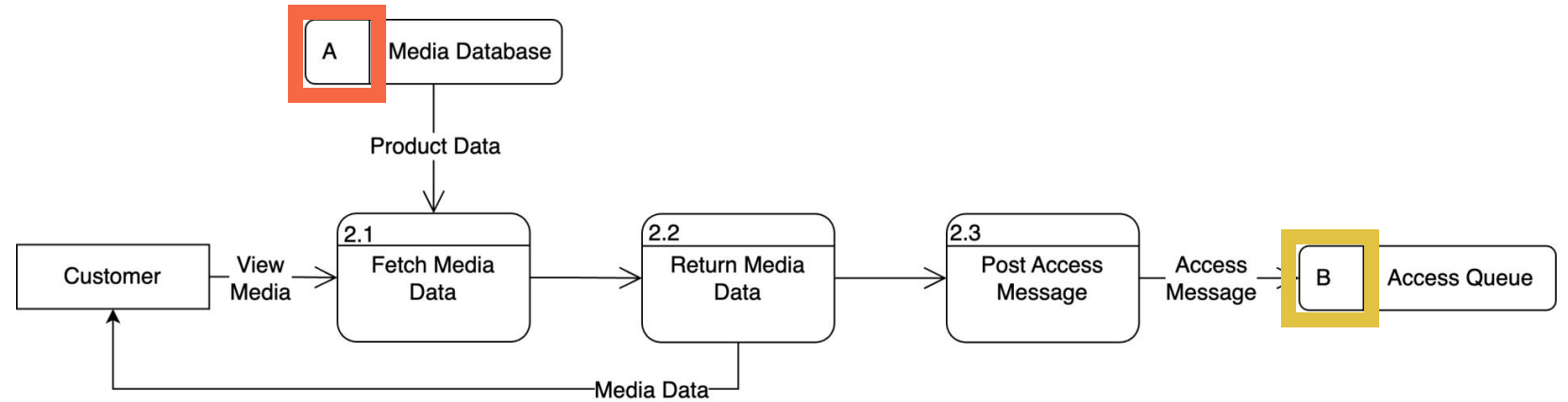
Referencing

Polyglot Media
Data Flow Diagram: media search, view and access analytics

Polyglot Media
Data Flow Diagram: media search, view and access analytics - 2. Fetch Media
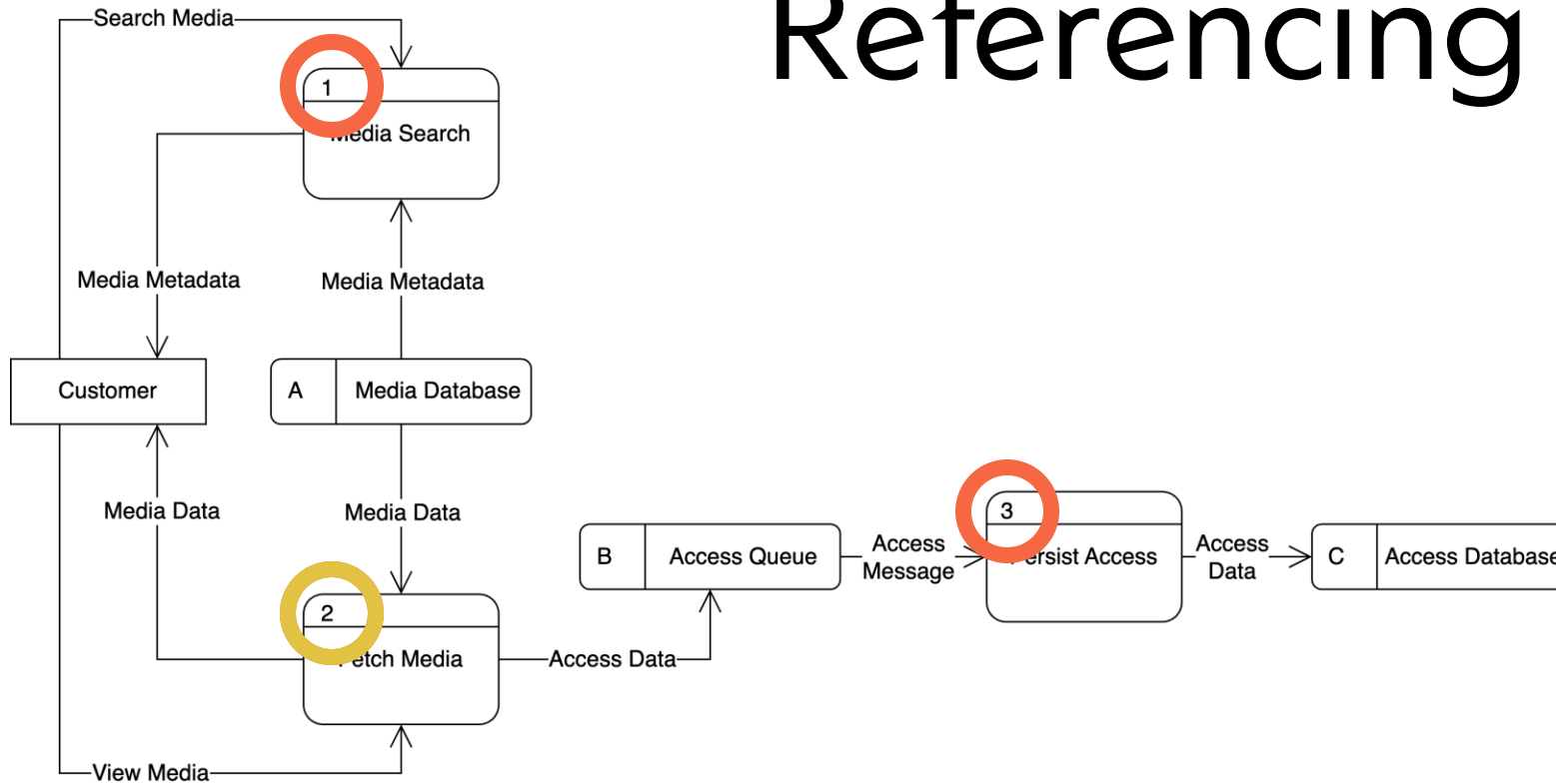
Referencing

Polyglot Media
Data Flow Diagram: media search, view and access analytics

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Referencing

Polyglot Media
Data Flow Diagram: media search, view and access analytics

Polyglot Media
Data Flow Diagram: media search, view and access analytics - 2. Fetch Media

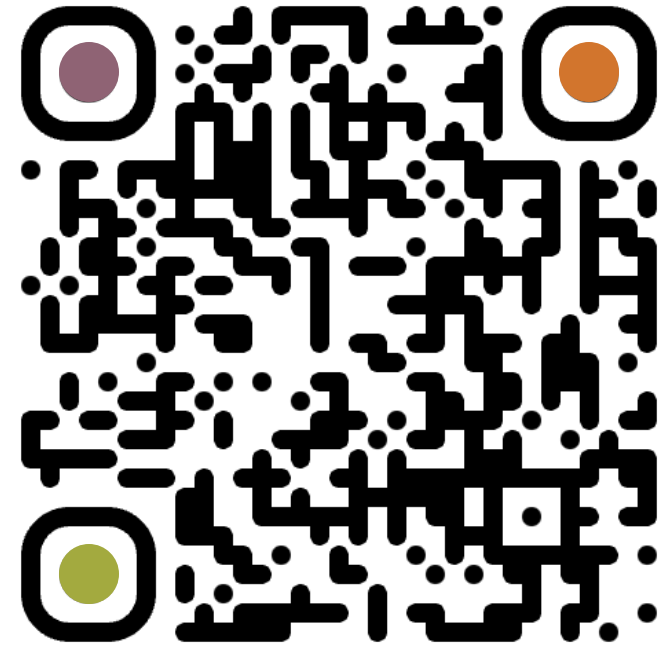Make explicit references to other levels of abstraction
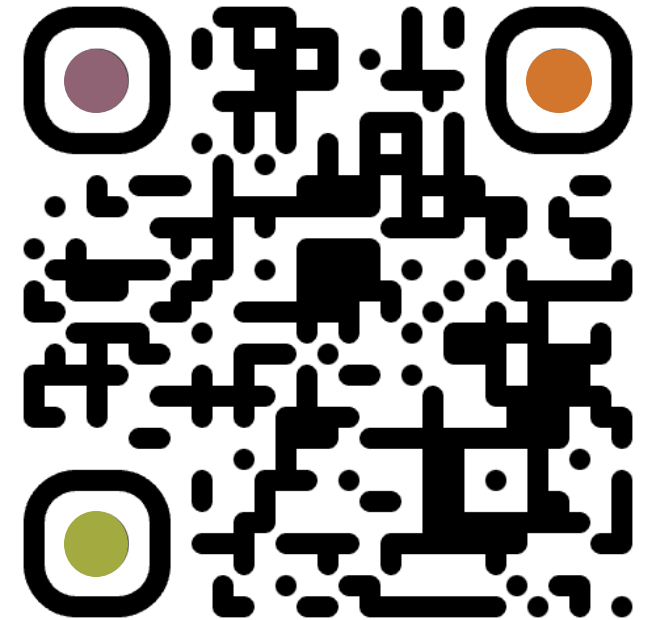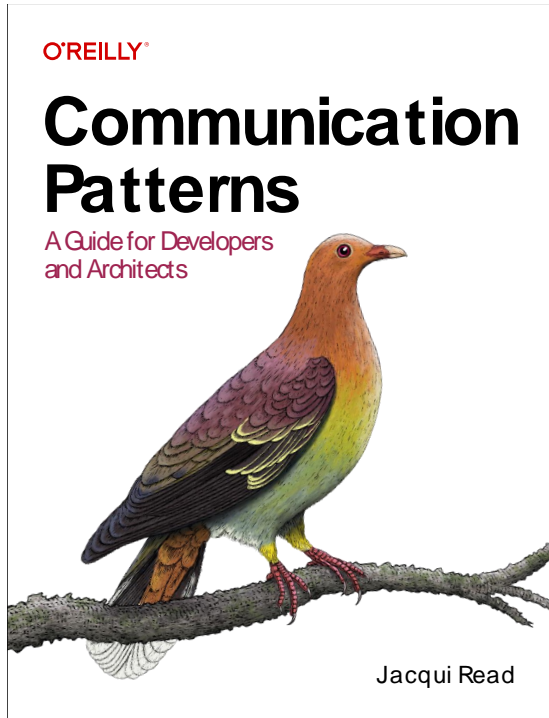
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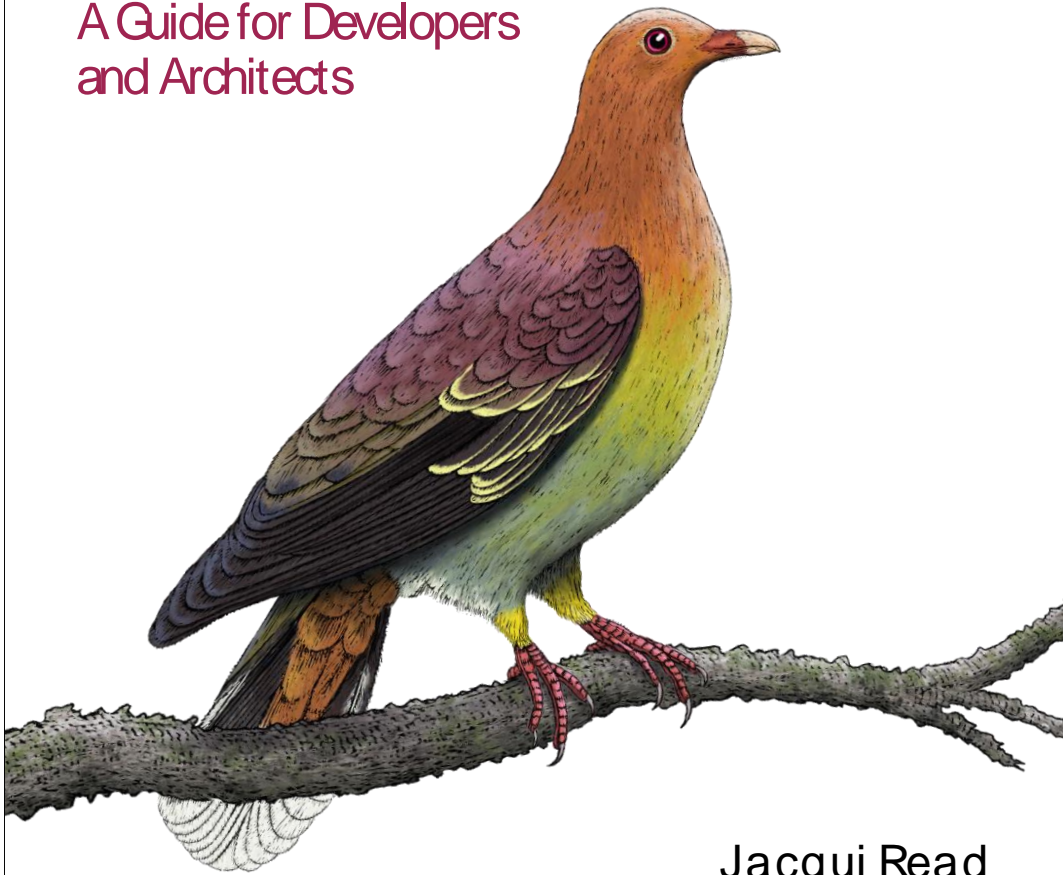
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