

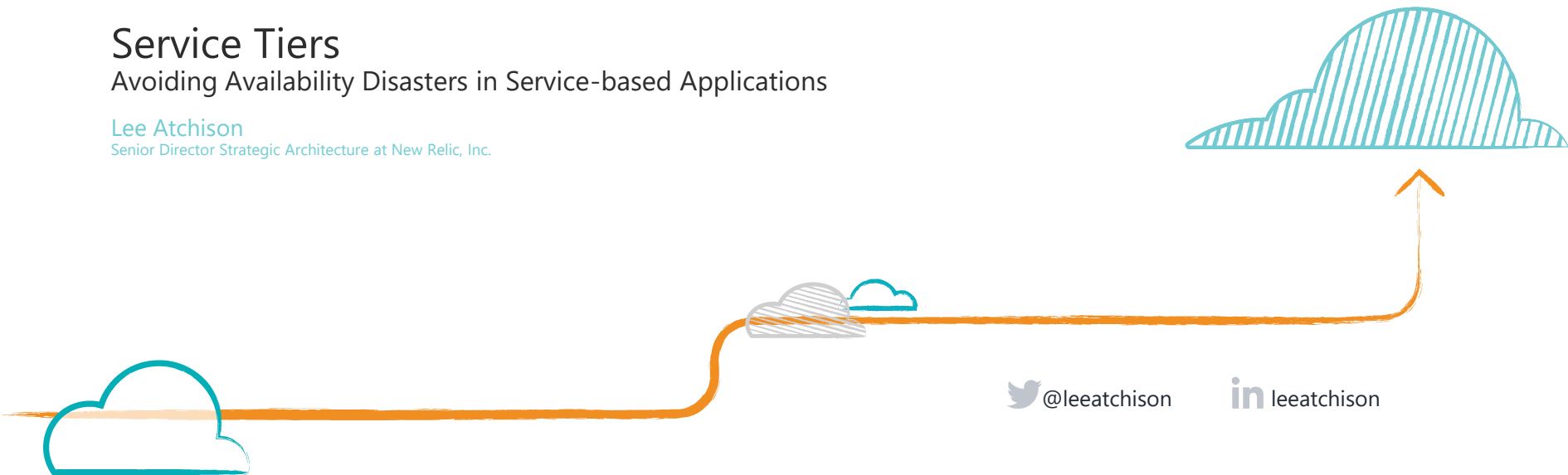


Service Tiers

Avoiding Availability Disasters in Service-based Applications

Lee Atchison

Senior Director Strategic Architecture at New Relic, Inc.



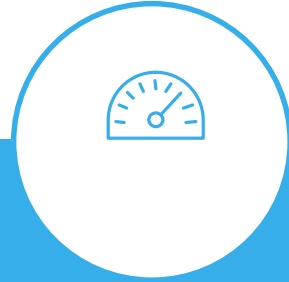
What is a Modern Application



Responsive to
Customer Needs



Scale
Dynamically



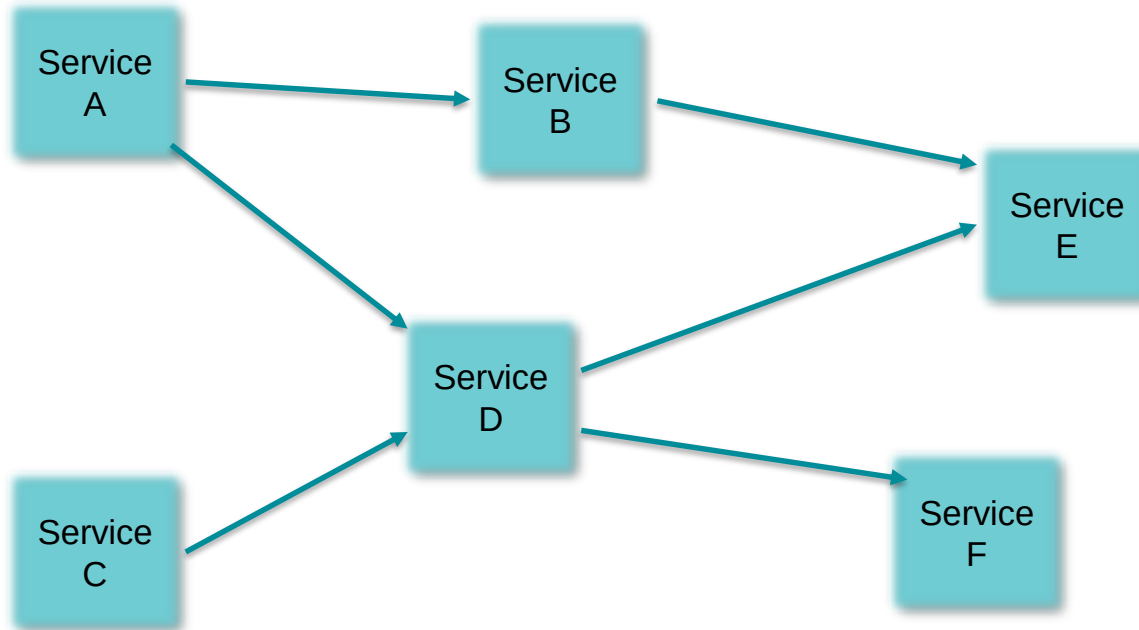
Maintain High
Availability

Building and Maintaining a Modern Application

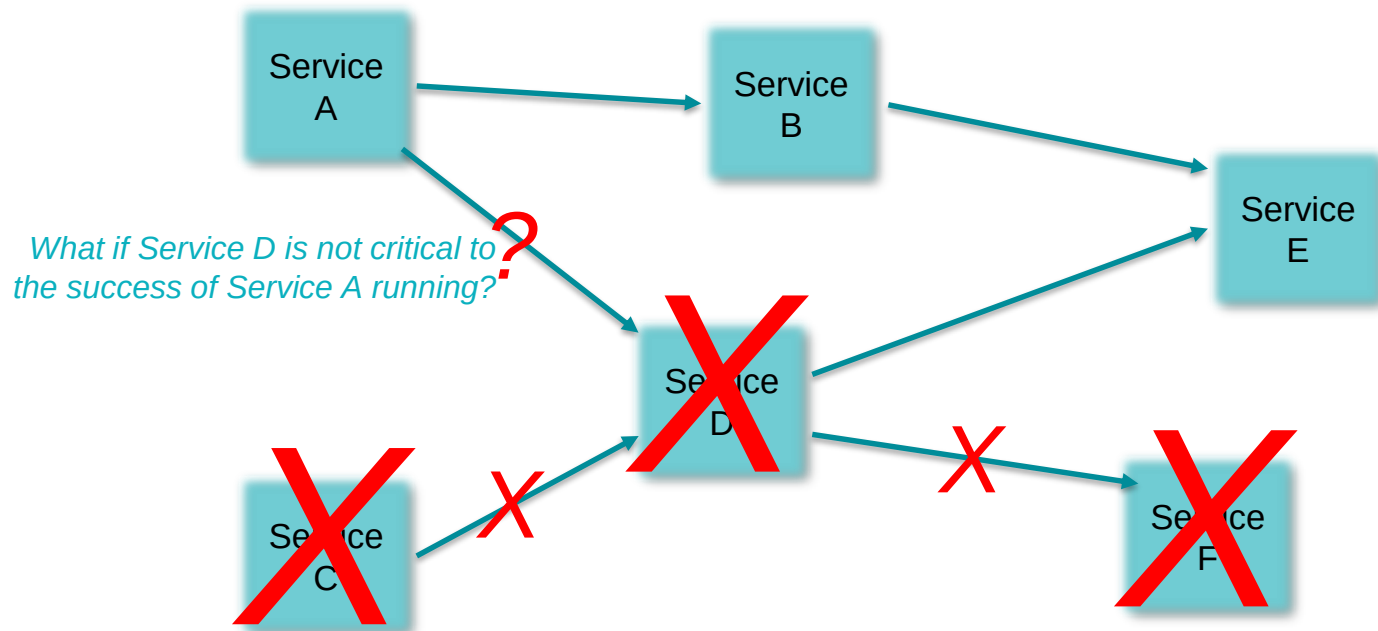


Flexible
Architecture

Service Based Application



Service Failure



Inter-Service Failures

Common Cause for Availability Issues

How do you decide where to invest your time and energy?

Add resiliency
everywhere

expensive,
complex,
inefficient

Ignore some
dependencies

can
be
disastrous

Waste time/money or make risky decisions?

Service Tiers

A label applied to every service



Service Tiers



Tier 1 Service

**A service where failure will
result in a significant impact to
customers or company bottom
line**

Example Tier 1 Services



Service Tiers



Tier 2 Service

**A service where failure will
result in degraded customer
experience, but doesn't
prevent its use**

Example Tier 2 Services



Search
Service



Order
Fulfillment
Service

Service Tiers



Tier 3 Service

**A service where failure will
result in minimal or difficult to
notice impact to
customers/business**

Example Tier 3 Services



Service Tiers



Tier 4 Service

**A service where failure will
result in no or minor impact to
customer/business**



Example Tier 4 Services



Sales Report
Generation
Service



Marketing
Email
Delivery
Service

Service Tiers

A label applied to every service based on impact

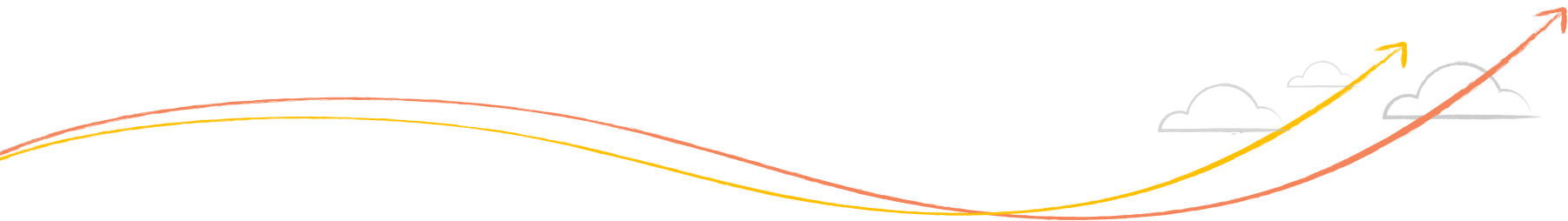
Tier 1 – Significant Impact

Tier 2 – Degraded Experience

Tier 3 – Limited Impact

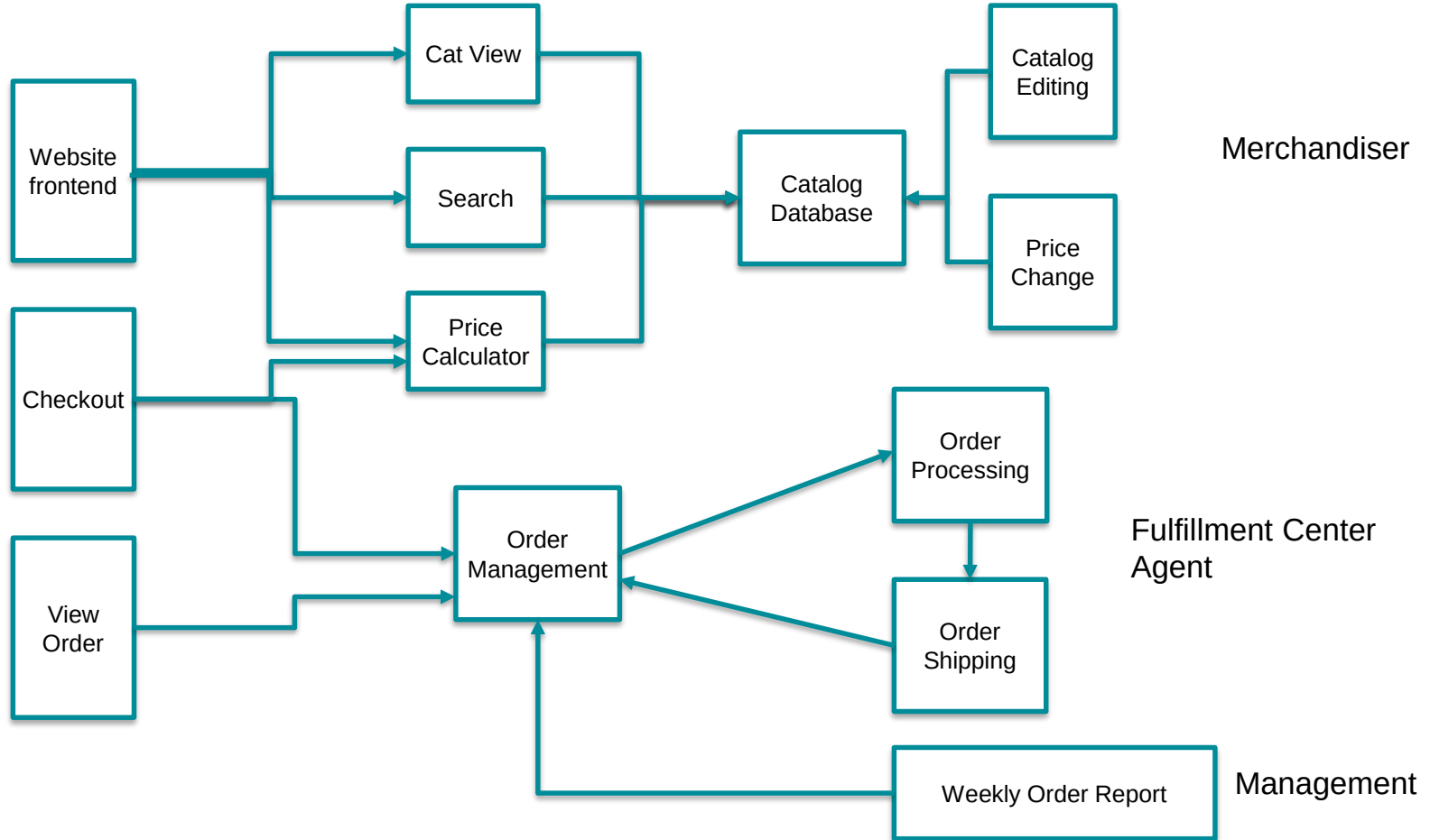
Tier 4 – No or Minor Impact

Example Application

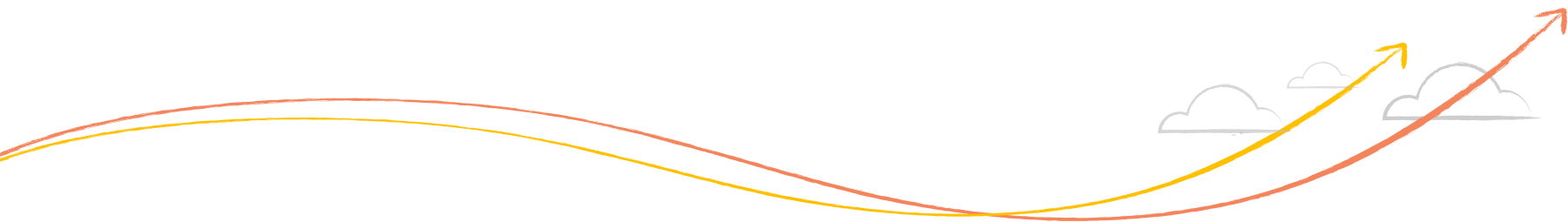


T-Shirt Store

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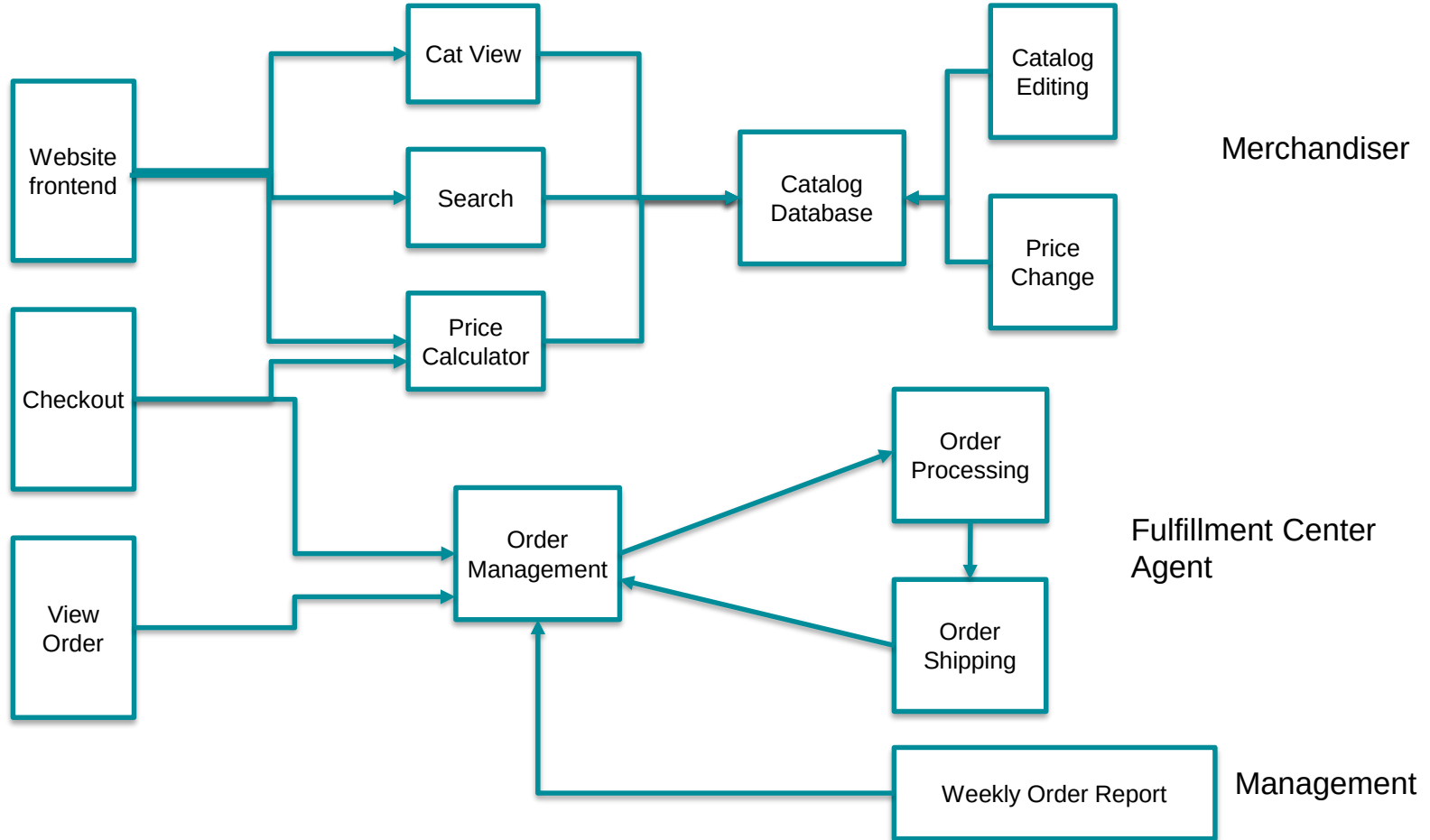


Assign Tiers



T-Shirt Store

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View Catalog

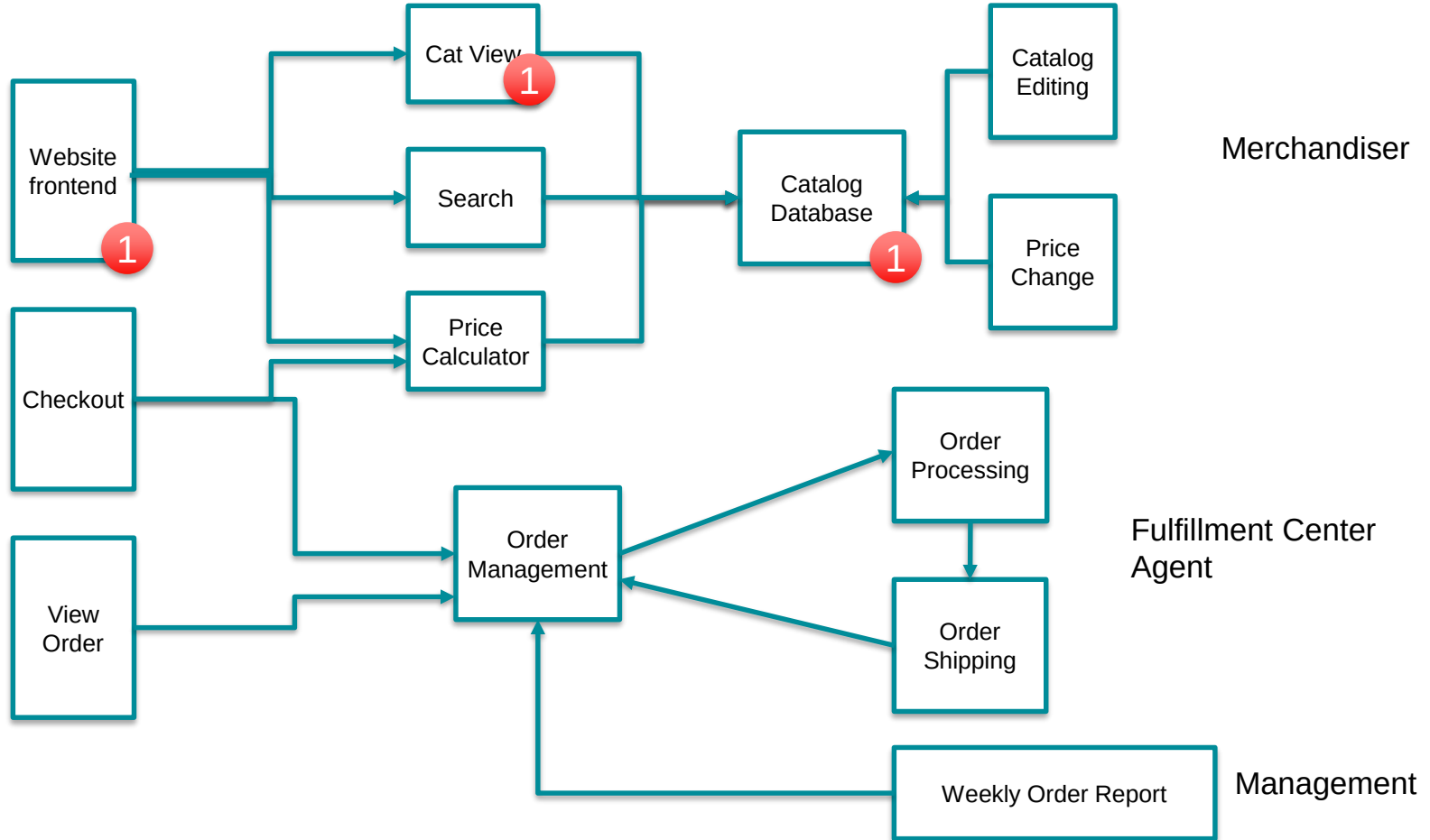
Customers need to see products to shop for them

- Website frontend
- Catalog View
- Catalog Database

➤ These are all Tier 1 Services
(company can't operate without it)

T-Shirt Store

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Search Catalog

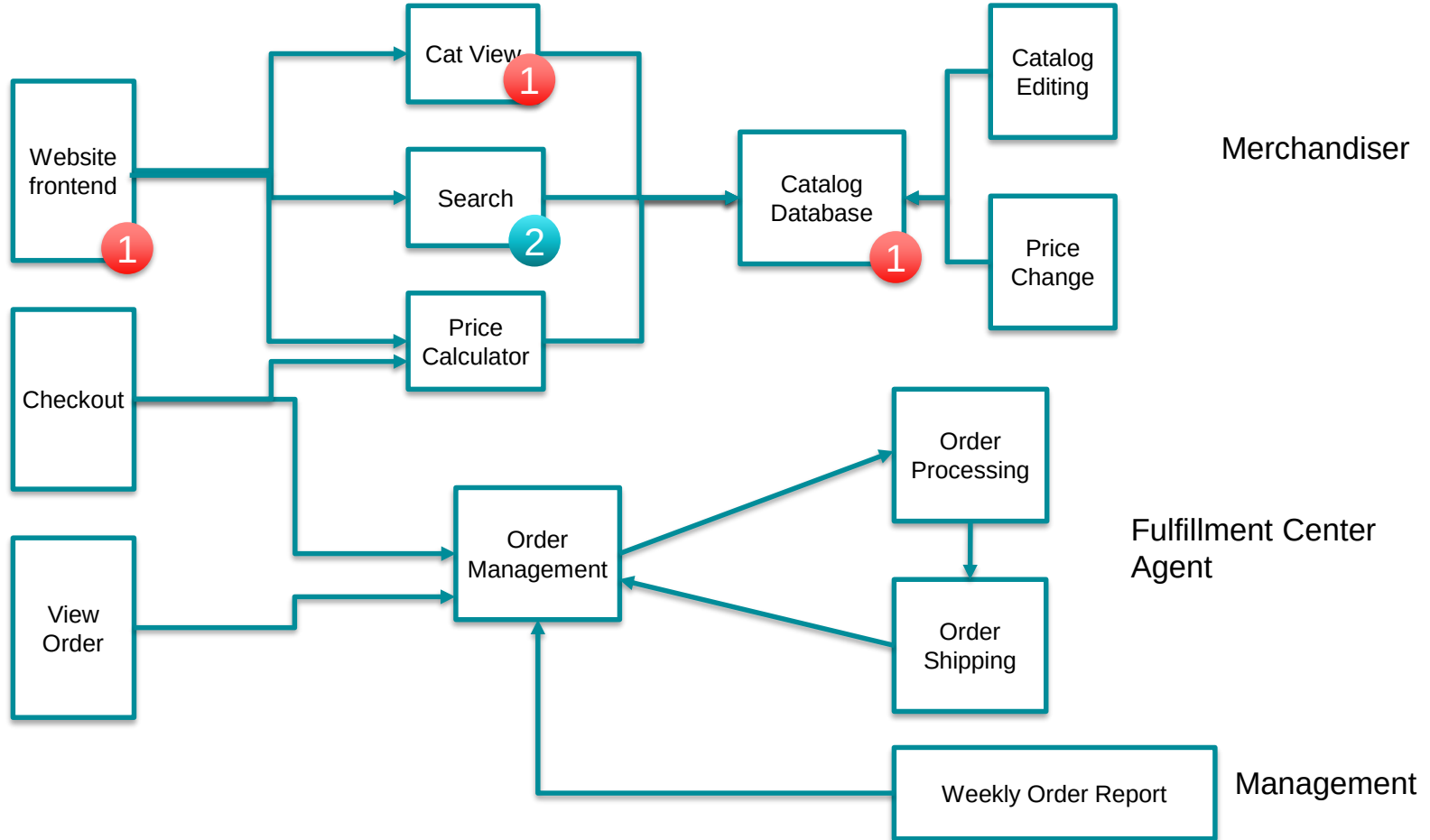
Customers want to search for product

- Catalog Search

➤ This is a Tier 2 Service
(Useful for shopping)

T-Shirt Store

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Catalog Editing

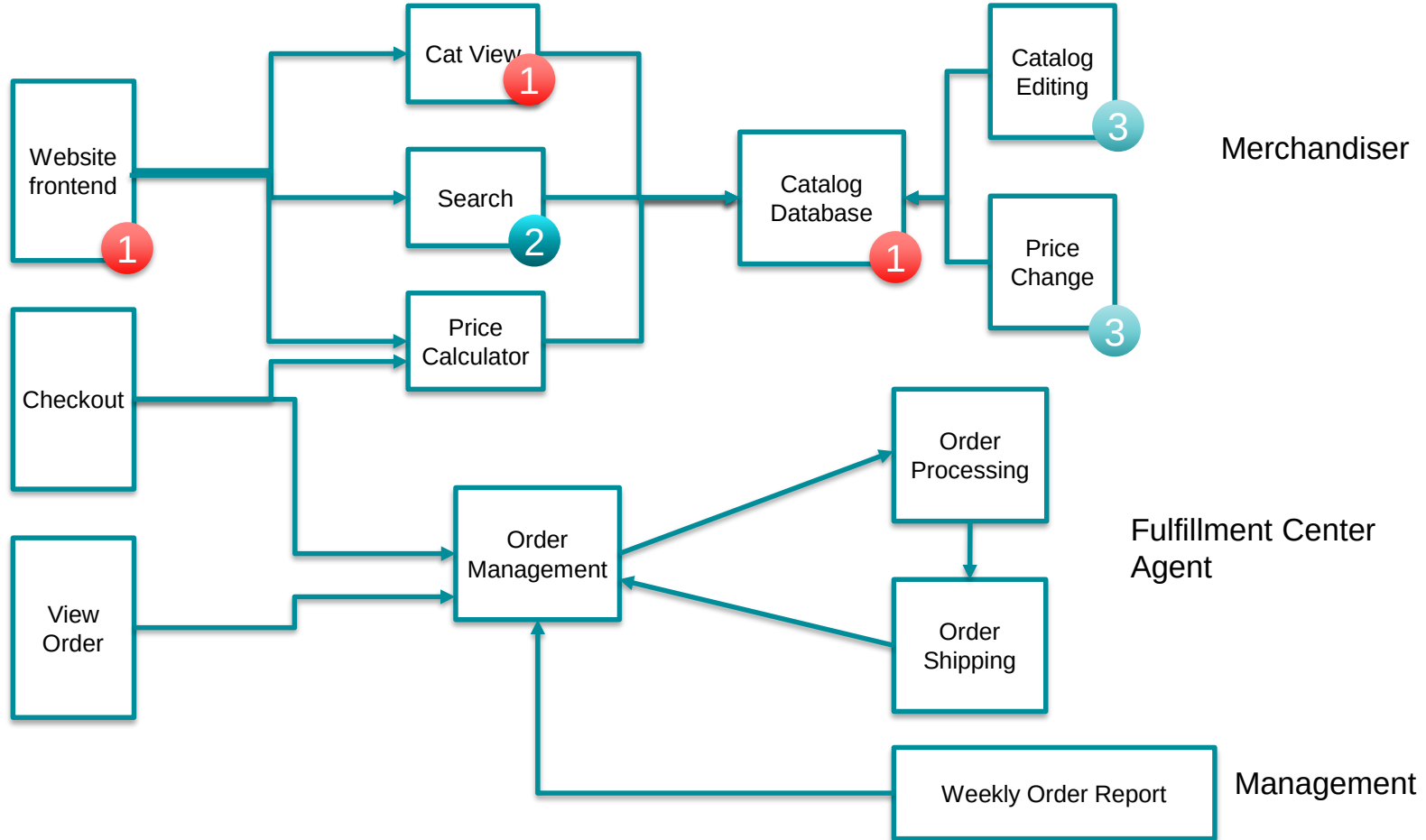
Merchandisers need to add/update products and set prices

- Catalog Editing
- Price Change

➤ These are Tier 3 Services
(Not immediately impactful to customers)

T-Shirt Store

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Checkout

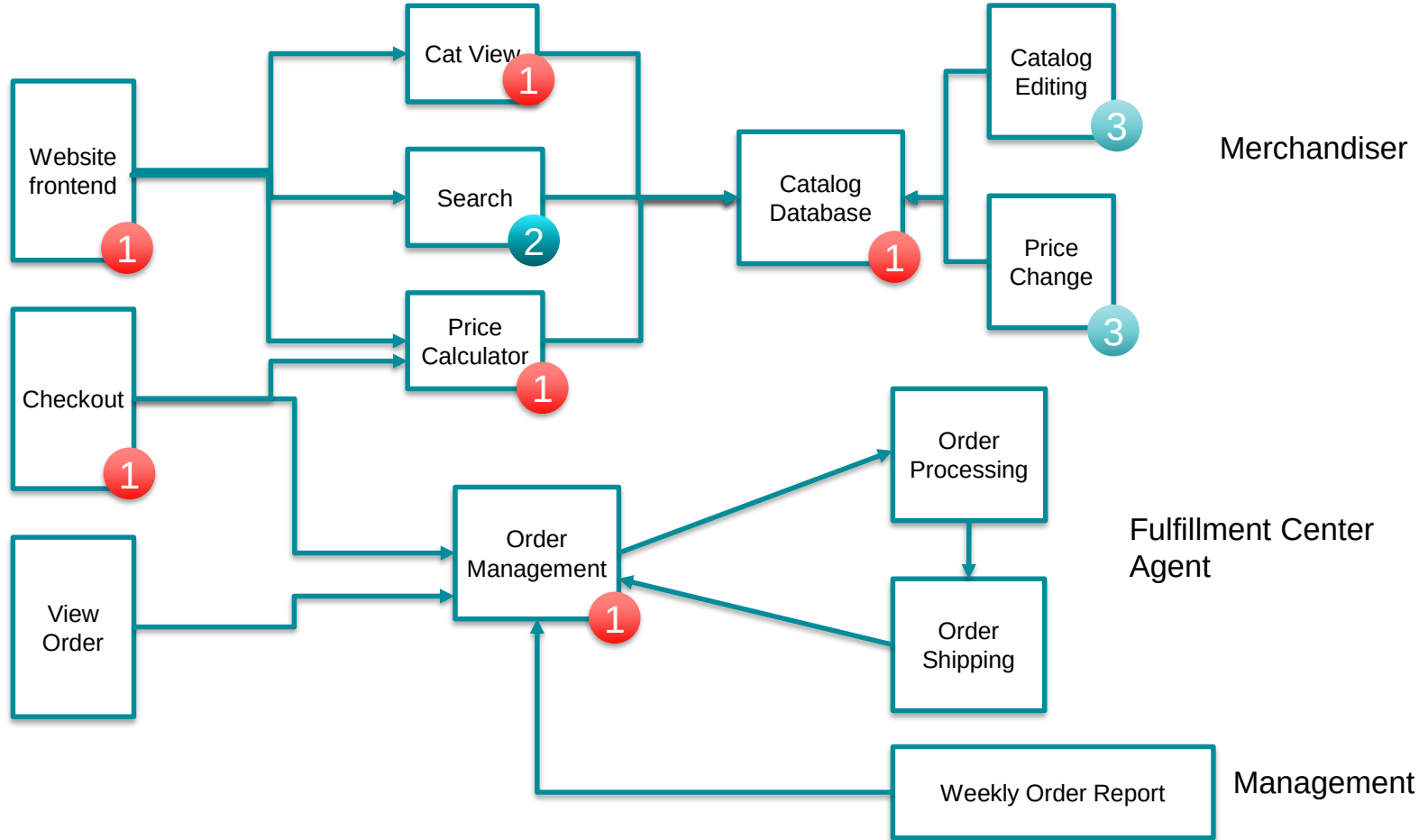
Customers need to create orders

- Checkout Service
- Order Management
- Price Calculator

➤ These are Tier 1 Services
(company cannot operate without them)

T-Shirt Store

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Order Processing and Shipping

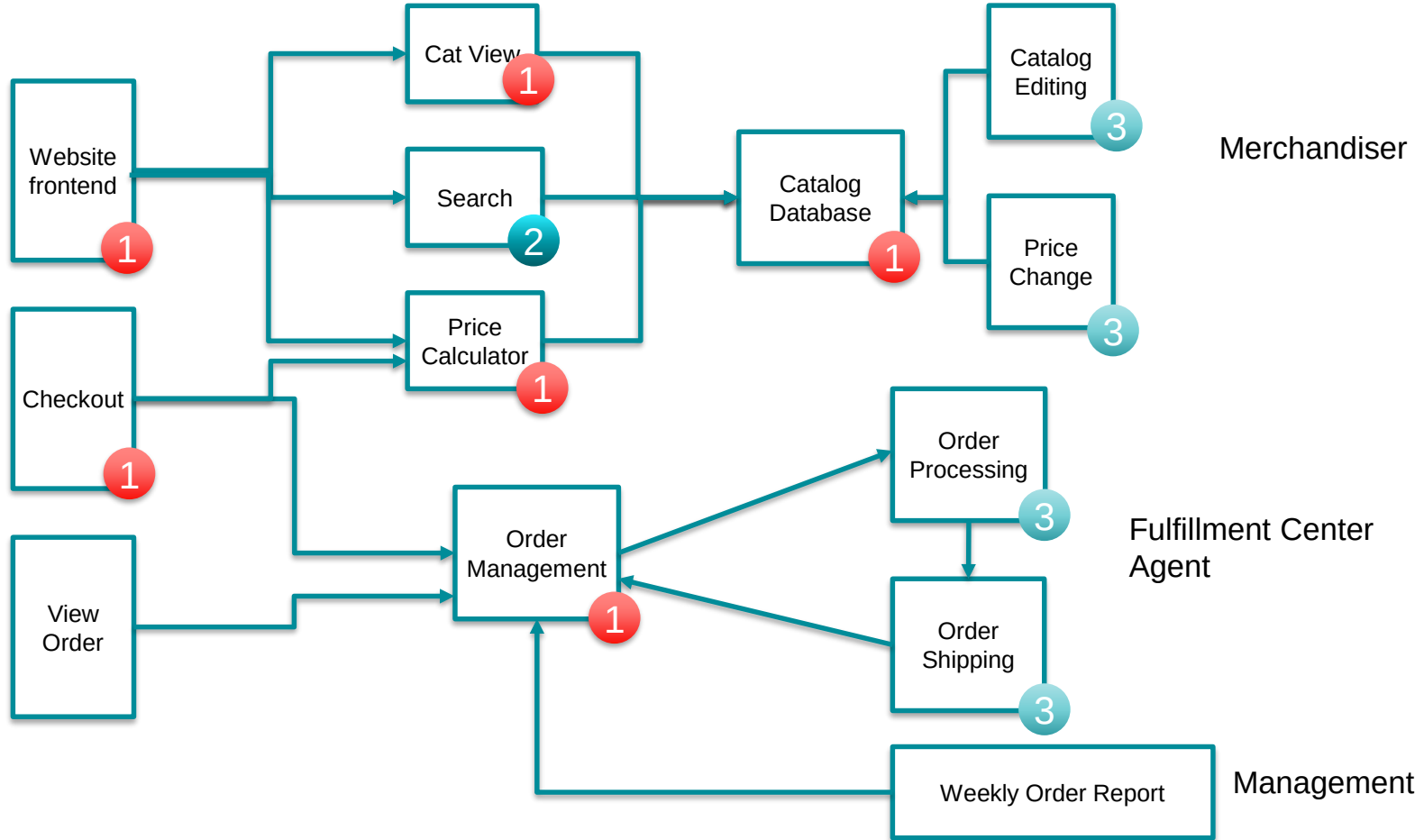
Fulfillment Center Agents want to

- Process Orders
- Ship Orders

➤ These are Tier 3 Services
(some delays have no impact on customers)

T-Shirt Store

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Order Status

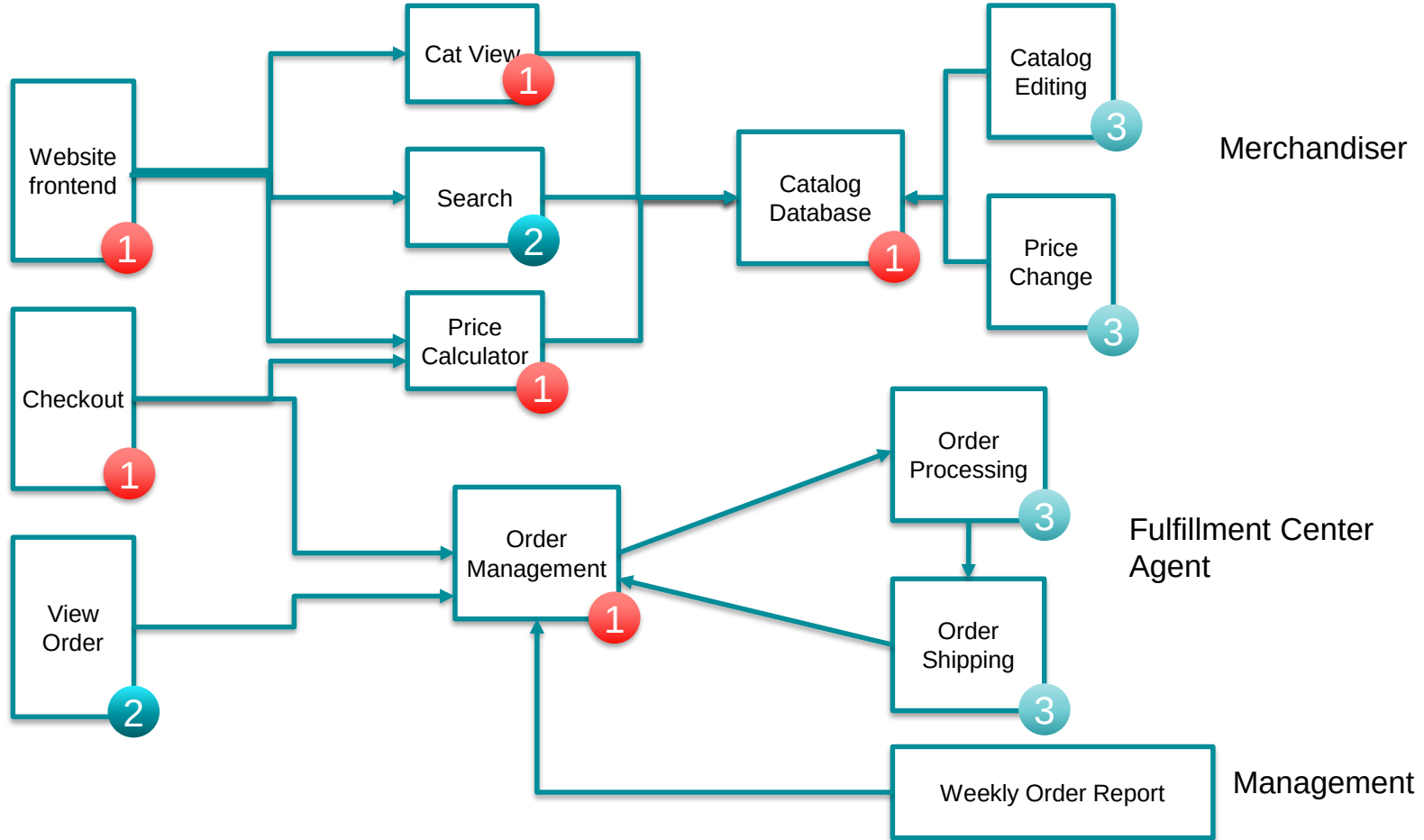
Customer wants to

- See status of order

➤ This is a Tier 2 Service
(useful but not essential for customers)

T-Shirt Store

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Order Report

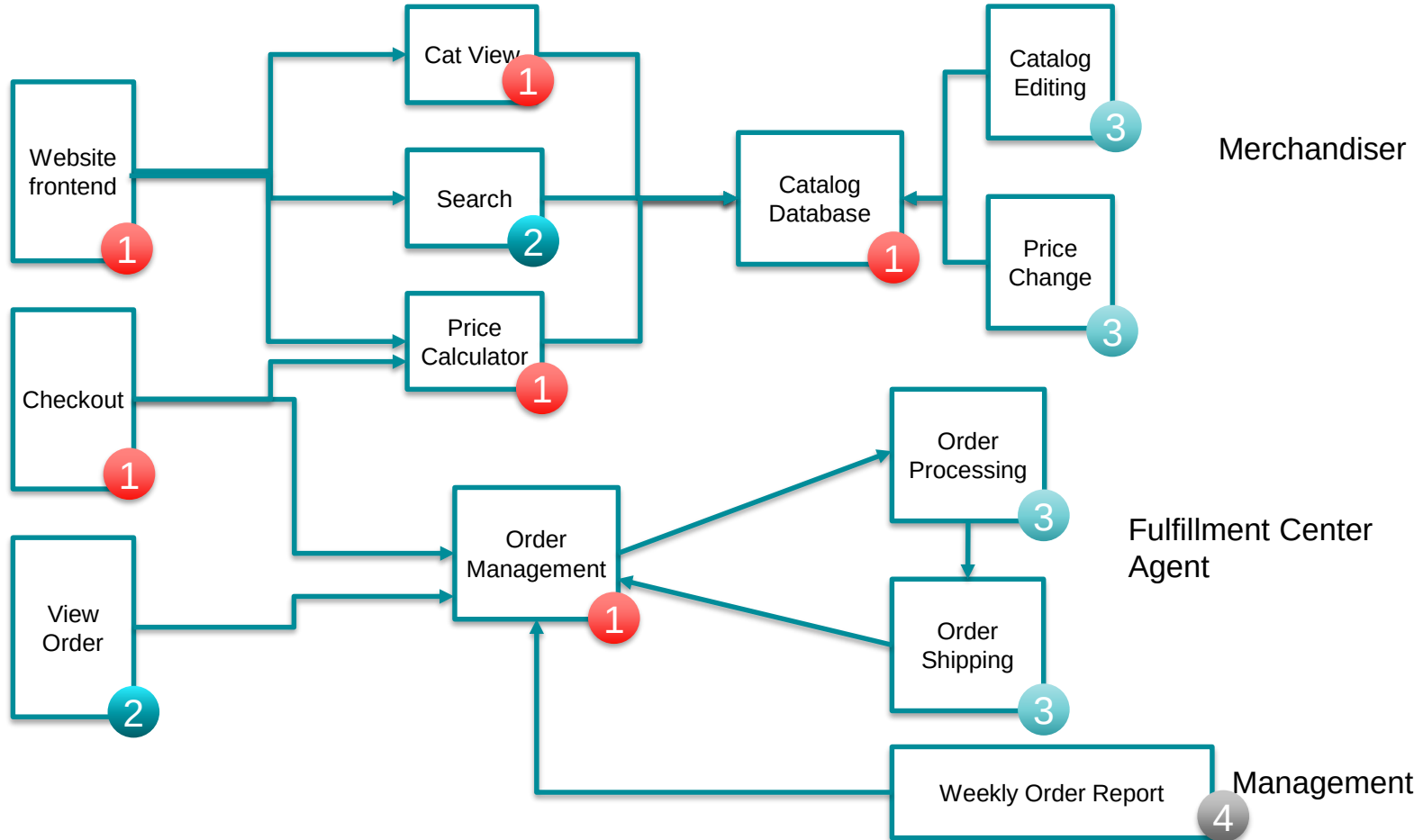
Managements wants to

- See weekly status of all orders

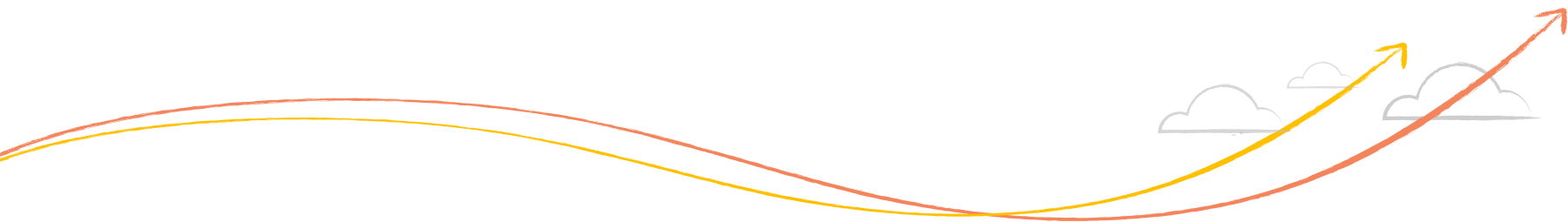
➤ This is a Tier 4 Service
(useful internally, but delay in delivery is not serious)

T-Shirt Store

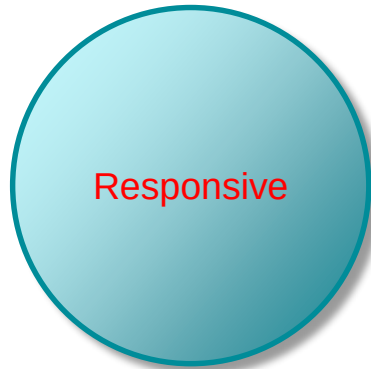
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Using Tiers



How do I Use Service Tiers?



Responsive



Dependencies

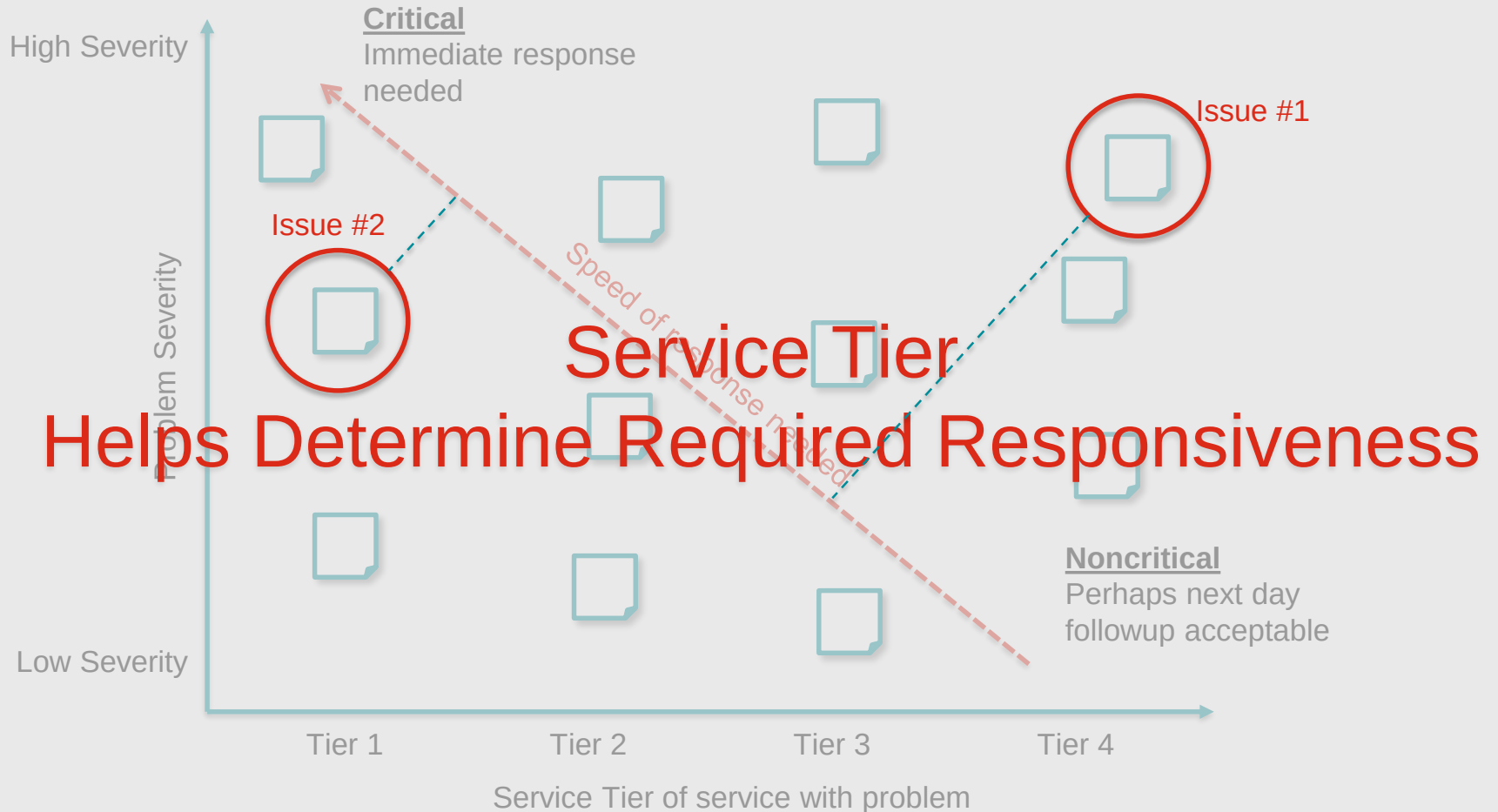


Expectations

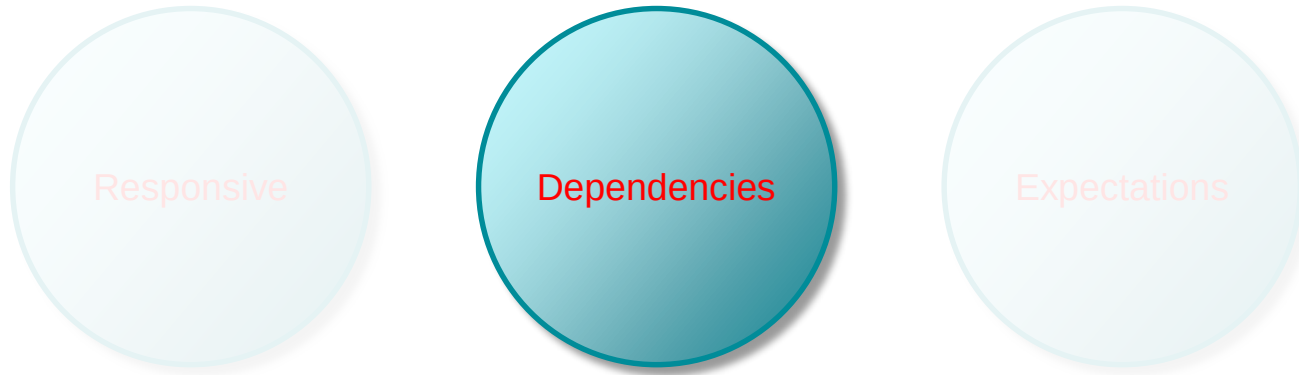
Responsiveness

When an issue with a service occurs, responsiveness differs depending on the needs of the service. Your responsiveness depends on:

1. Severity of the issue
2. Tier of service having the issue



How do I Use Service Tiers?



Dependencies

Compare Service Tier of a service and a dependency determines the criticalness of the dependency.



How you handle dependencies is determined by the comparison of Service Tiers.

Critical Dependency

Service is higher tier than dependency



Critical Dependency: Service needs to handle dependency failures gracefully.

Dependency failure should not cause service to fail!

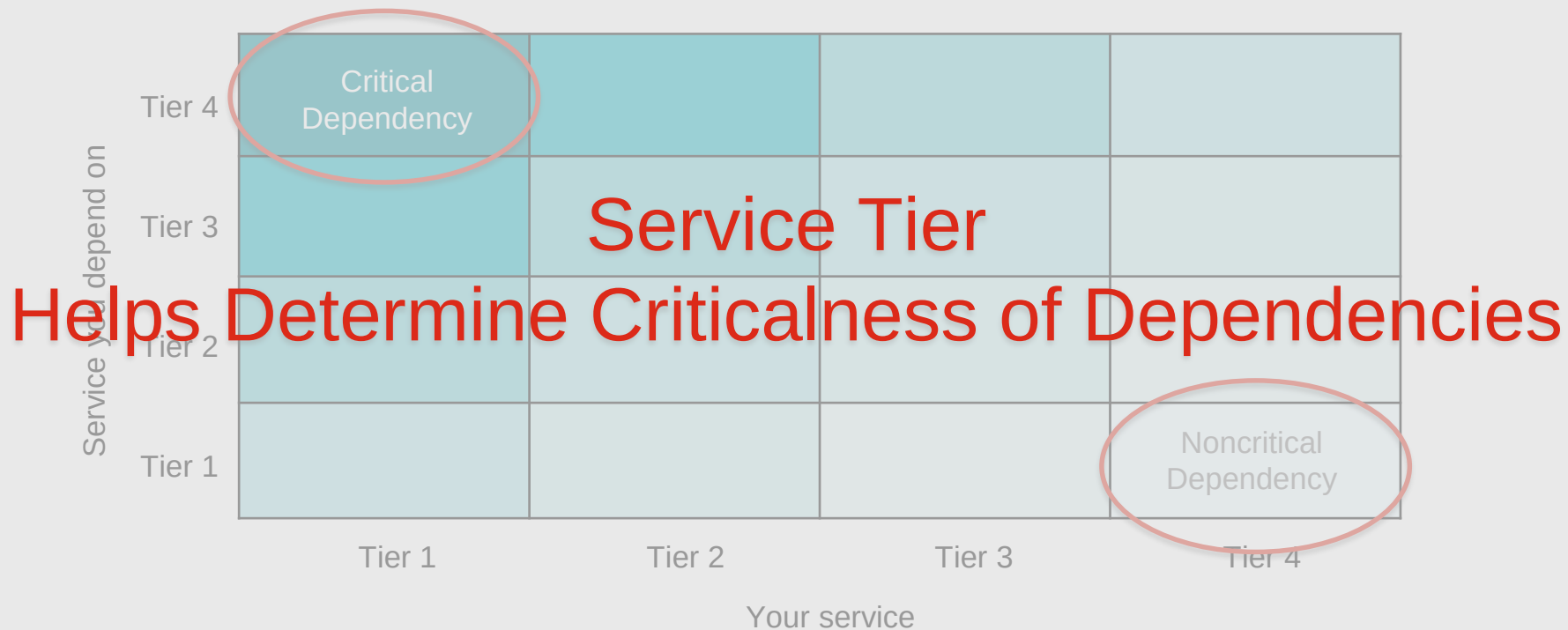
Noncritical Dependency

Service is lower tier than dependency



Noncritical Dependency: Service can generally ignore dependency failures.
Usually acceptable for service to fail if dependency fails.

Dependencies



How do I Use Service Tiers?



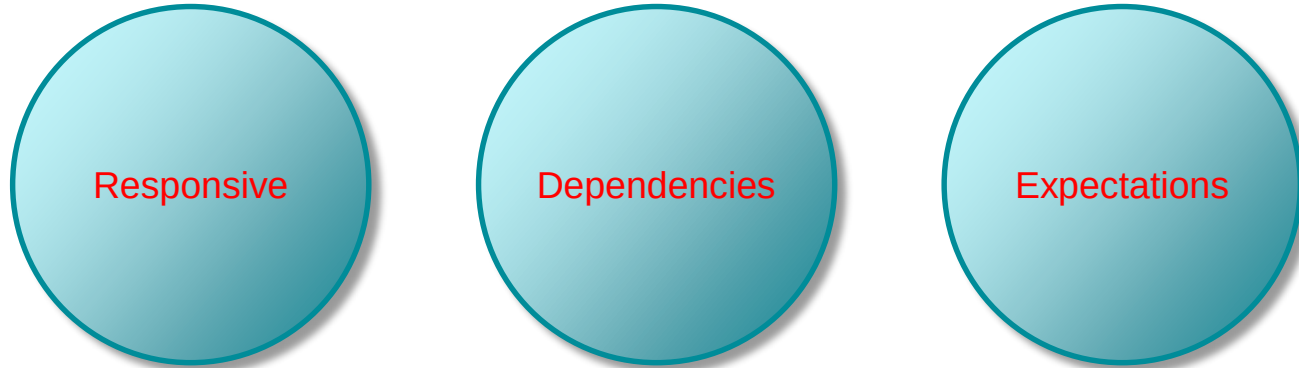
Expectations



More Generally:

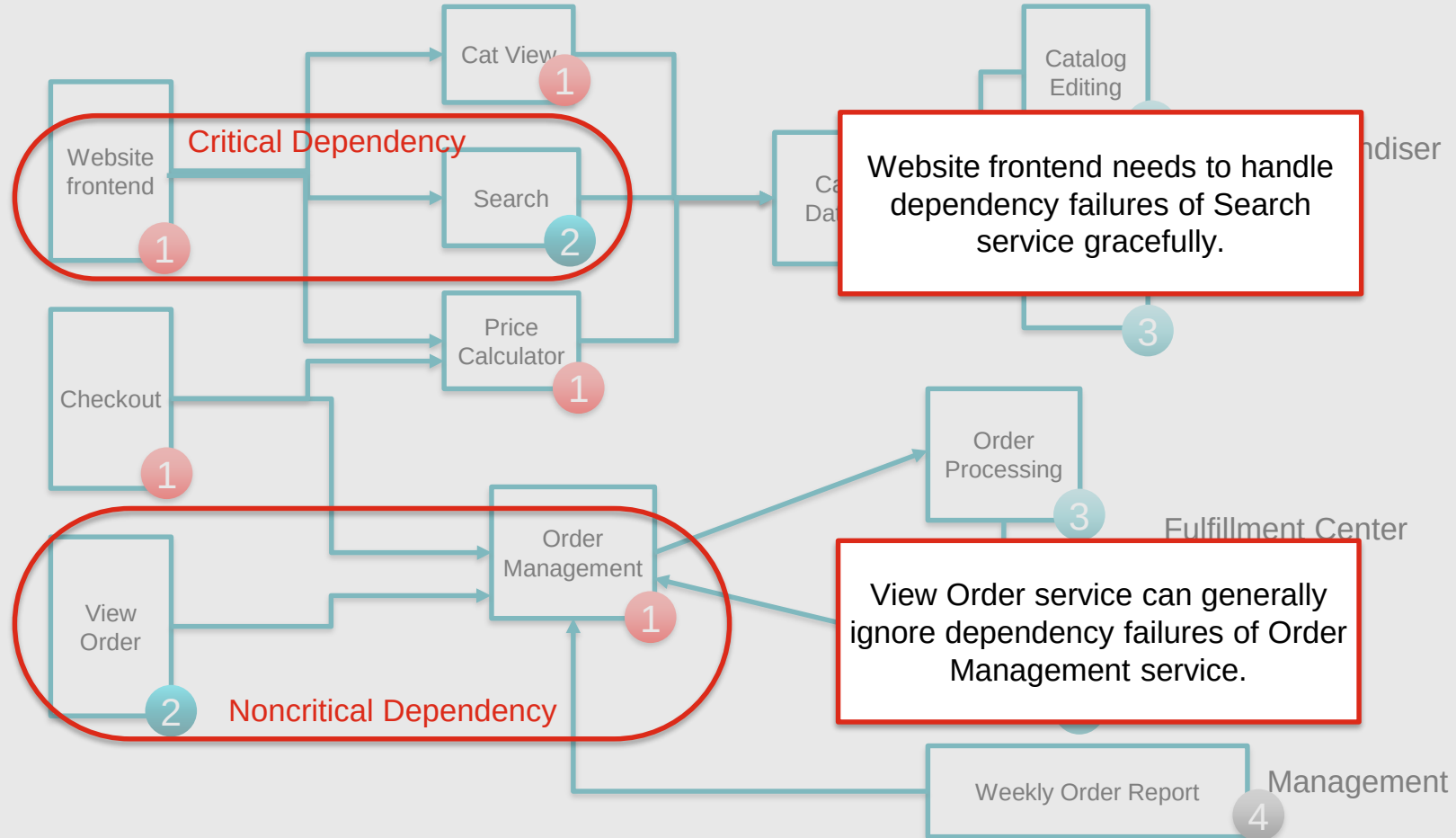
Higher the **service's** Service Tier, the greater the expectations for that service.
Faster, higher availability, more responsive support...

How do I Use Service Tiers?

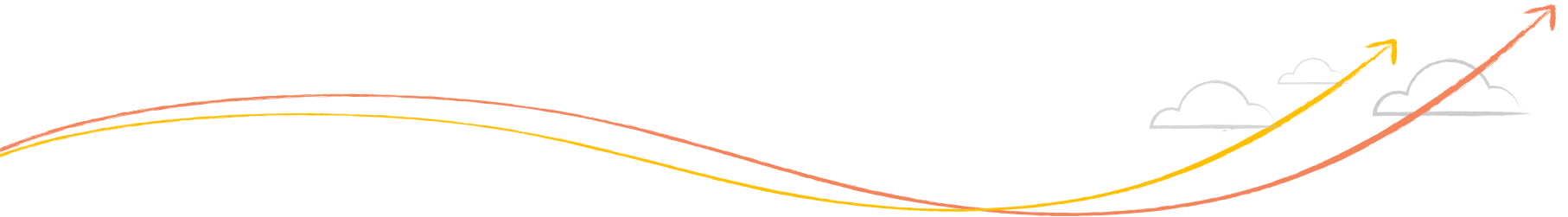


T-Shirt Store

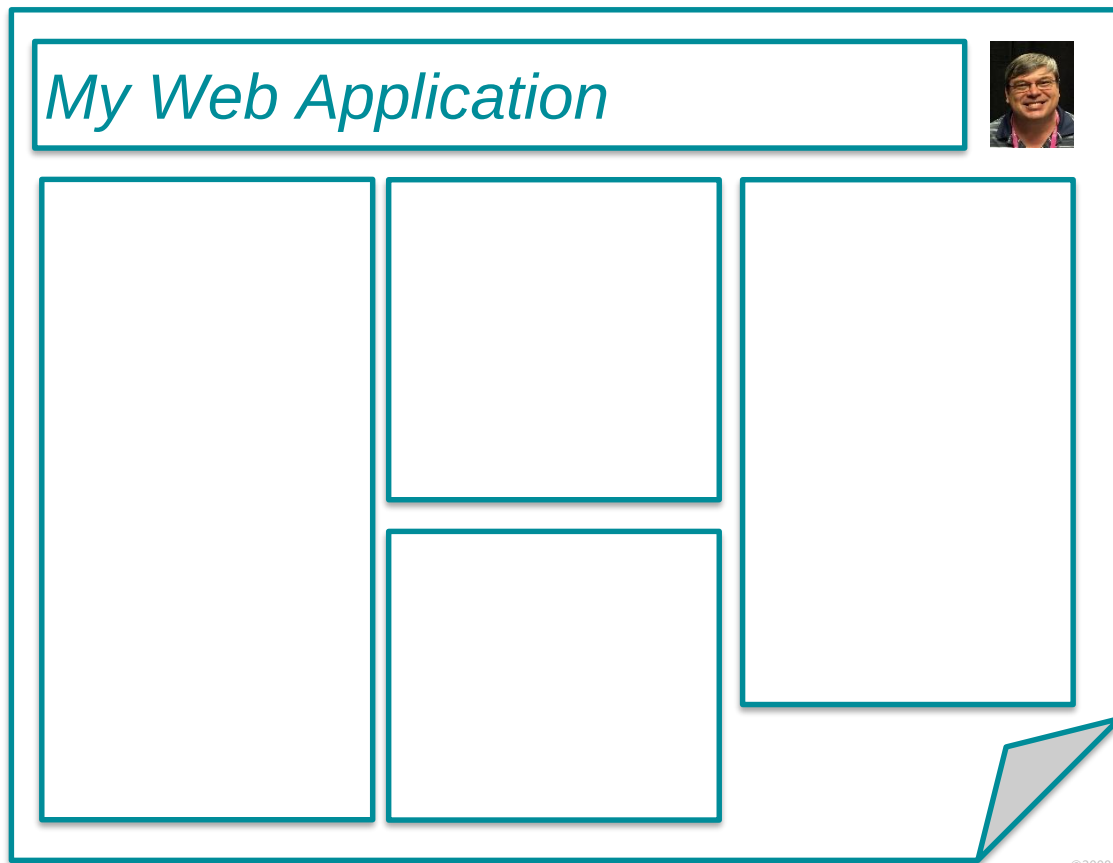
CUSTOMERS



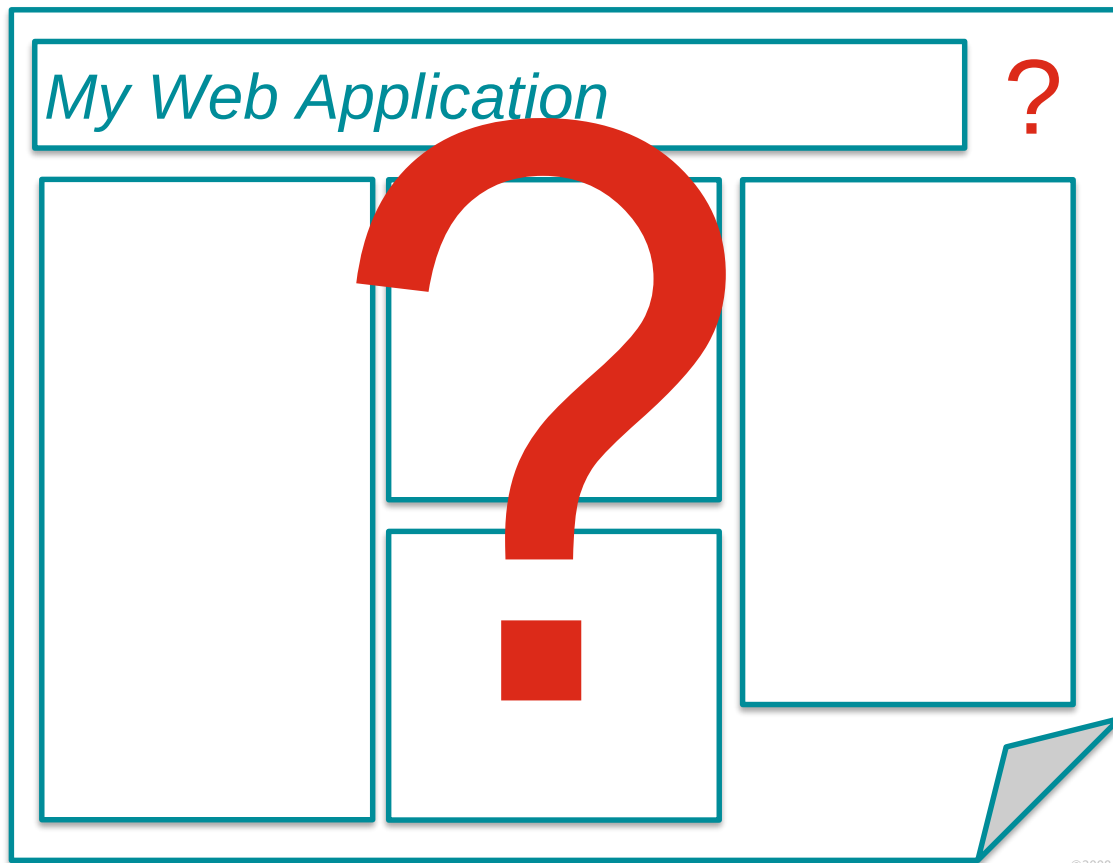
Classic, True Story Example



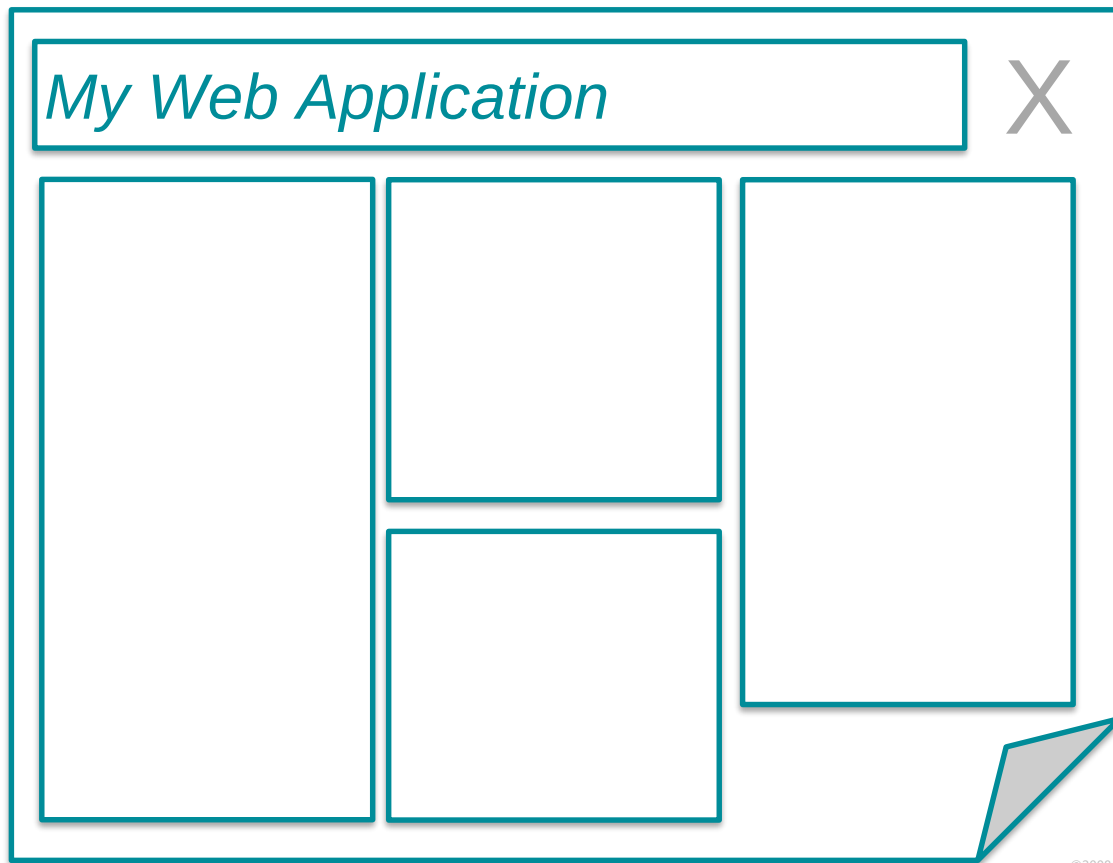
True Story Avatar Example



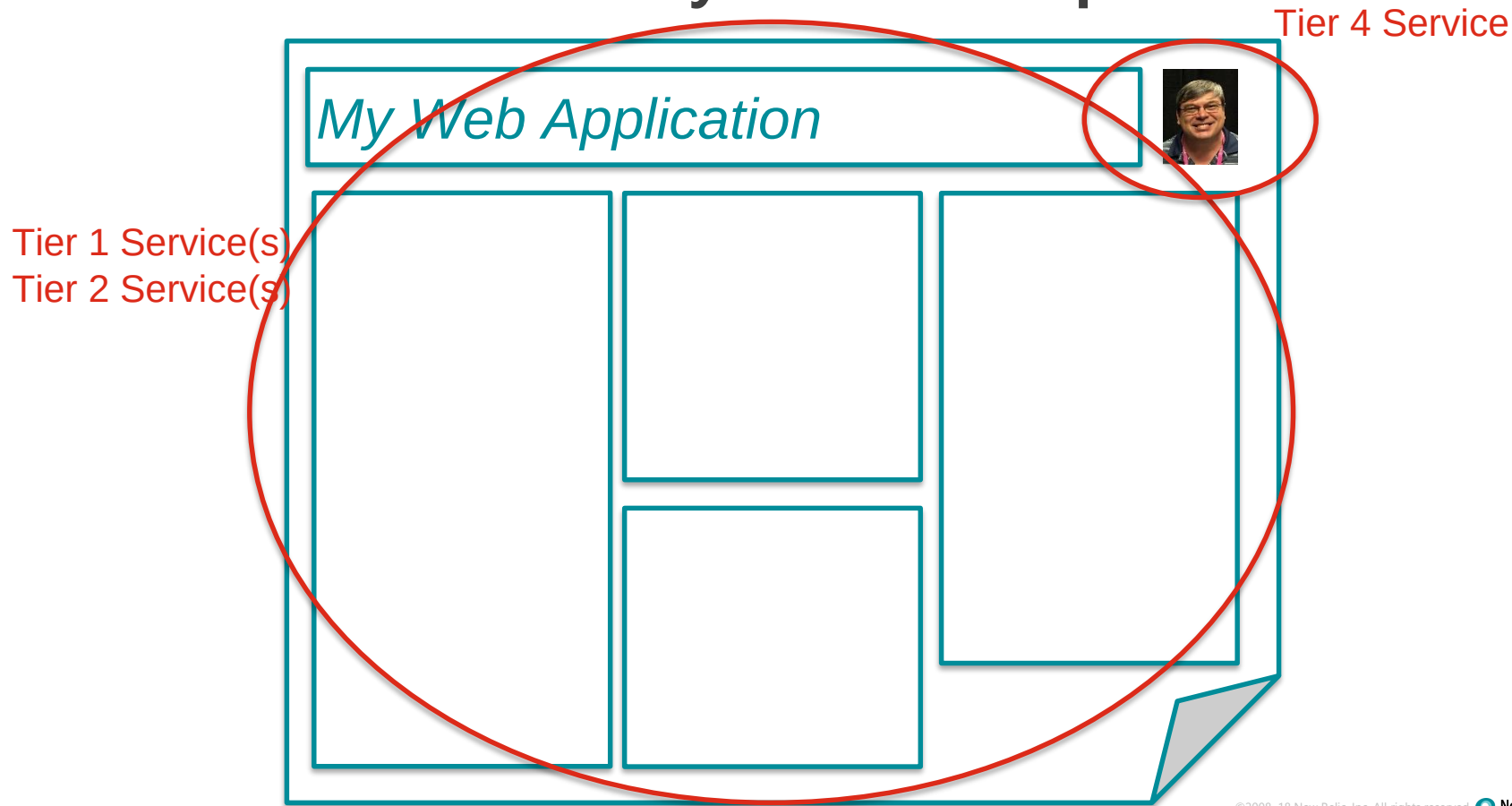
True Story Avatar Example



True Story Avatar Example



True Story Avatar Example

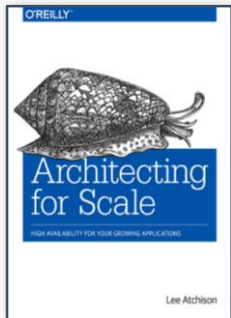


Service Tiers

A label applied to every service



Simple, basic, but critical component in performance contracts between services.



“#1, Top DevOps Books to read in 2018”

– Apiumhub

“10 Tech Books for Summer Reading”

– Informaiton Week/Network Computing

Architecting for Scale

By: Lee Atchison

Published by: O'Reilly Media

<http://scalinginthe.cloud>

Thank You

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