Open@Epic CONFERENCE

Speed, Safety, and Standards: Engineering Your Connection

Presenters



Ben Garstecki

Interfaces and Web Services

Epic

Goals

1. Pick the right tool for the job
2. Identify common pitfalls in performance and scalability
3. Understand best practices for data security and patient privacy

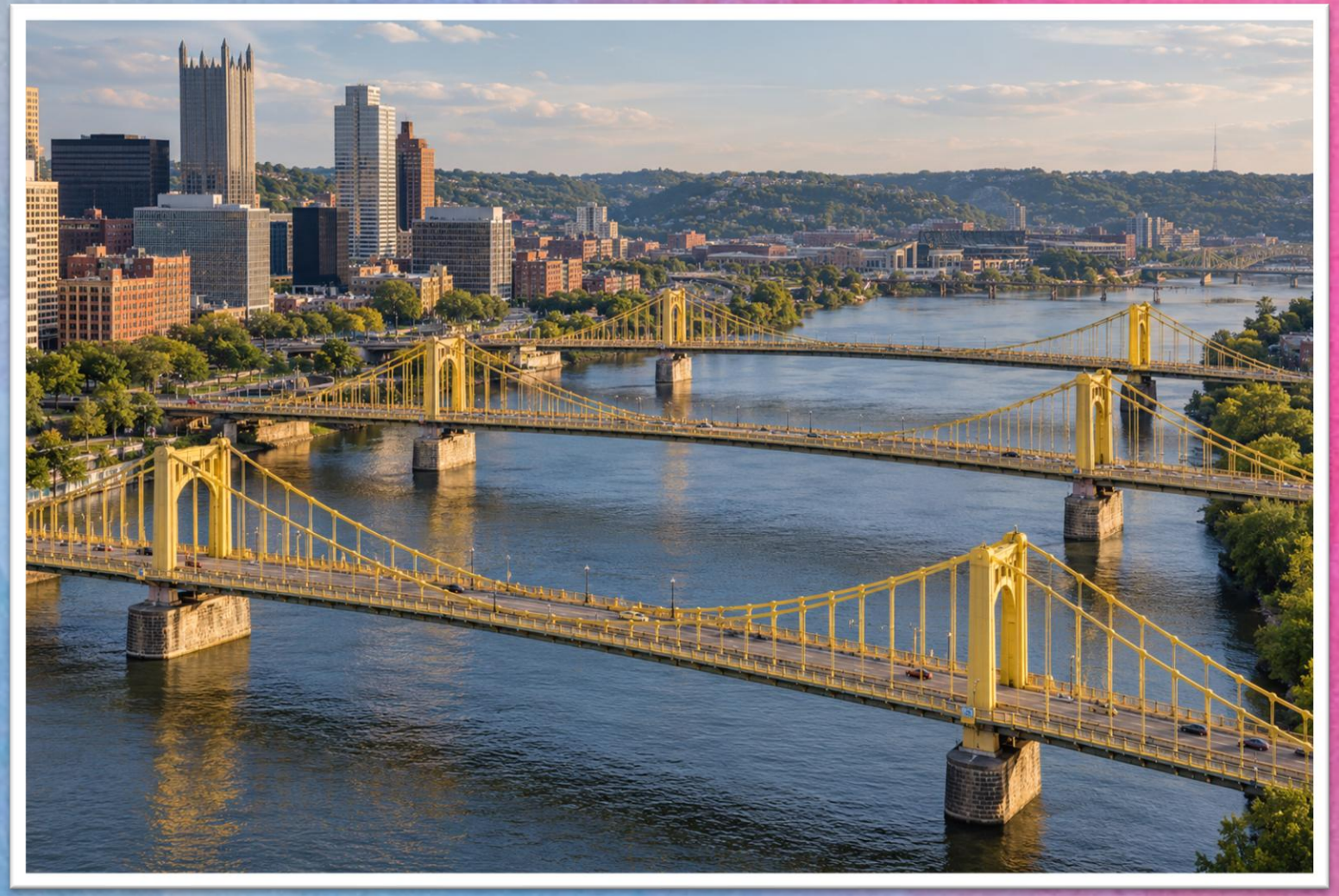
Designing Before Building

Plan for Performance and Scalability



Anyone can build a bridge that stands. It takes an engineer to build a bridge that barely stands.

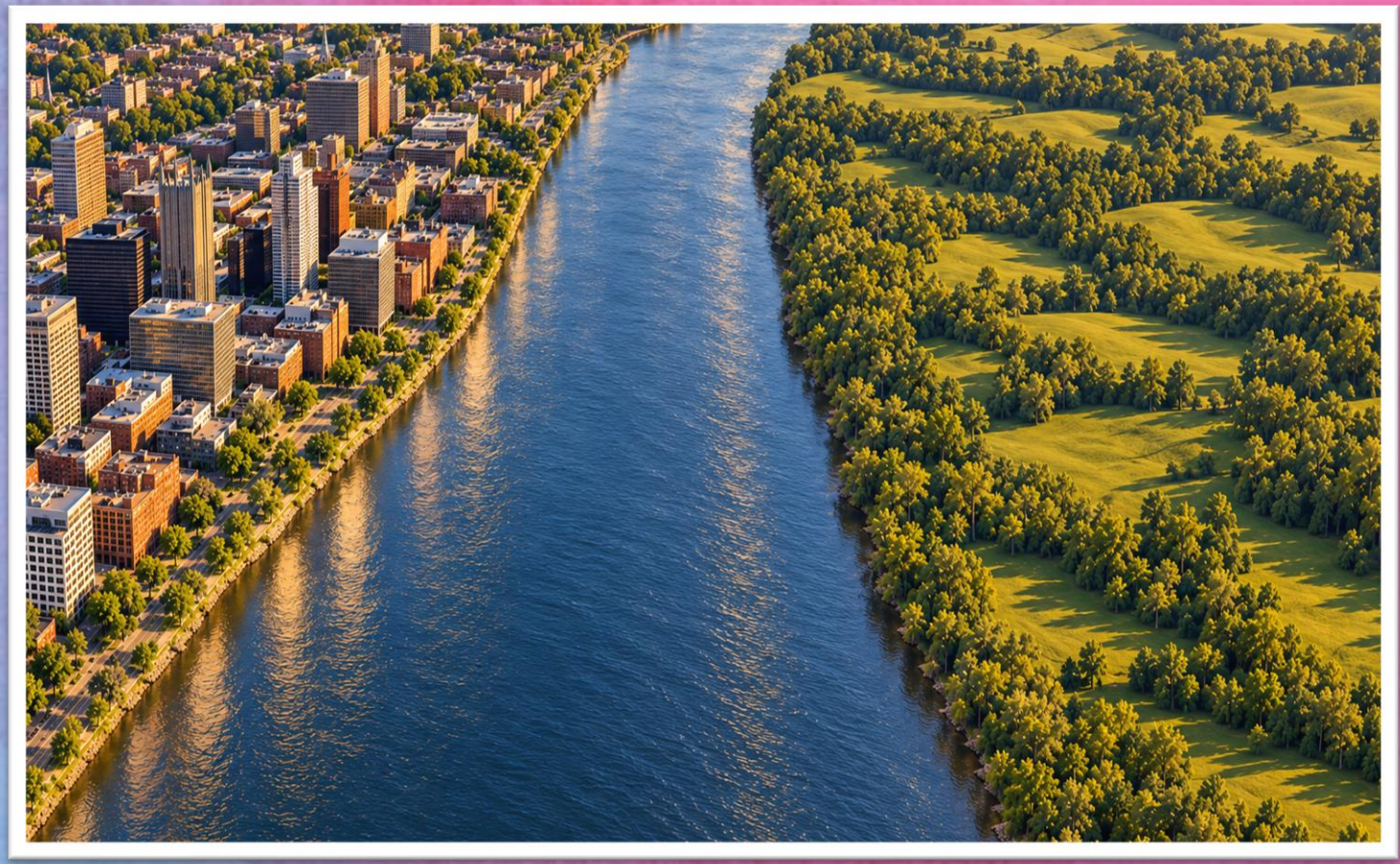
Speaking of Bridges



Hierarchy of Scalable Integration Design

Functional Need

Functional Need



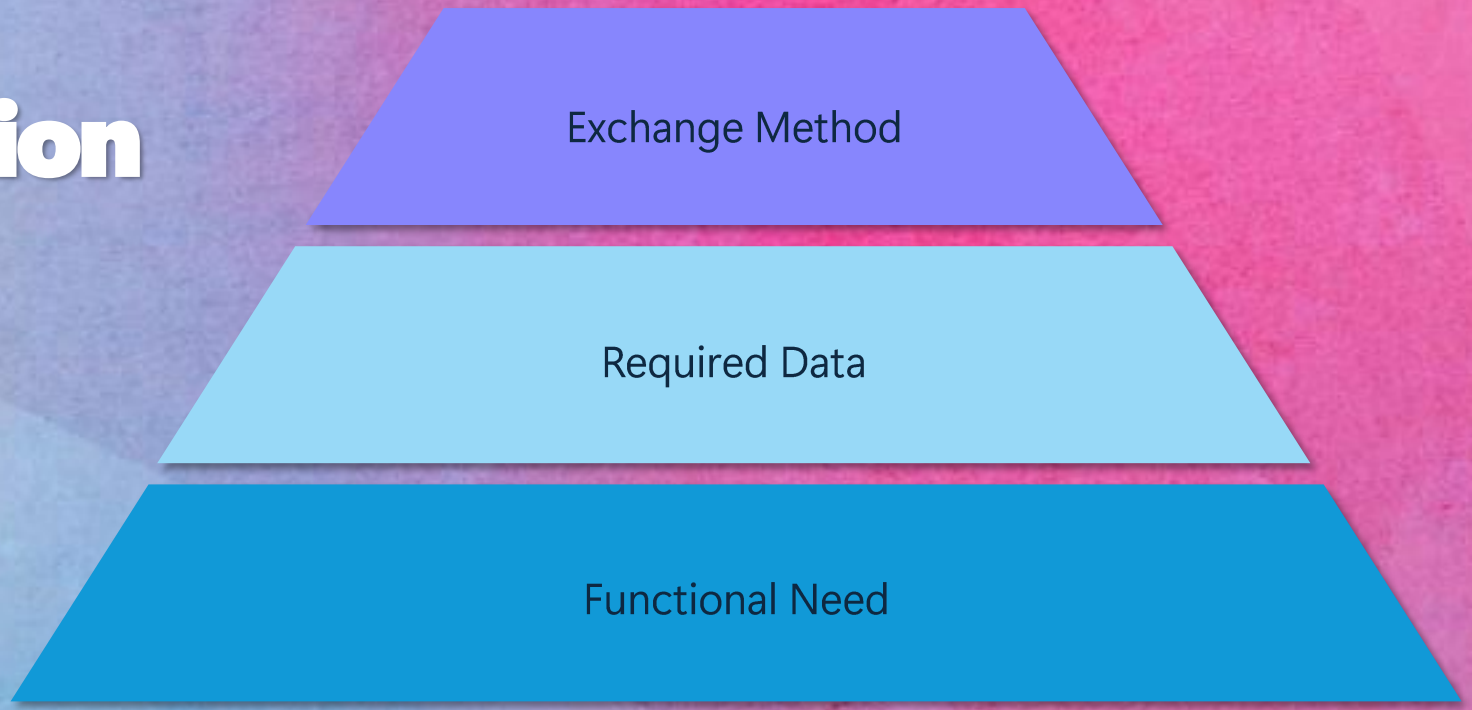
Hierarchy of Scalable Integration Design



Required Data



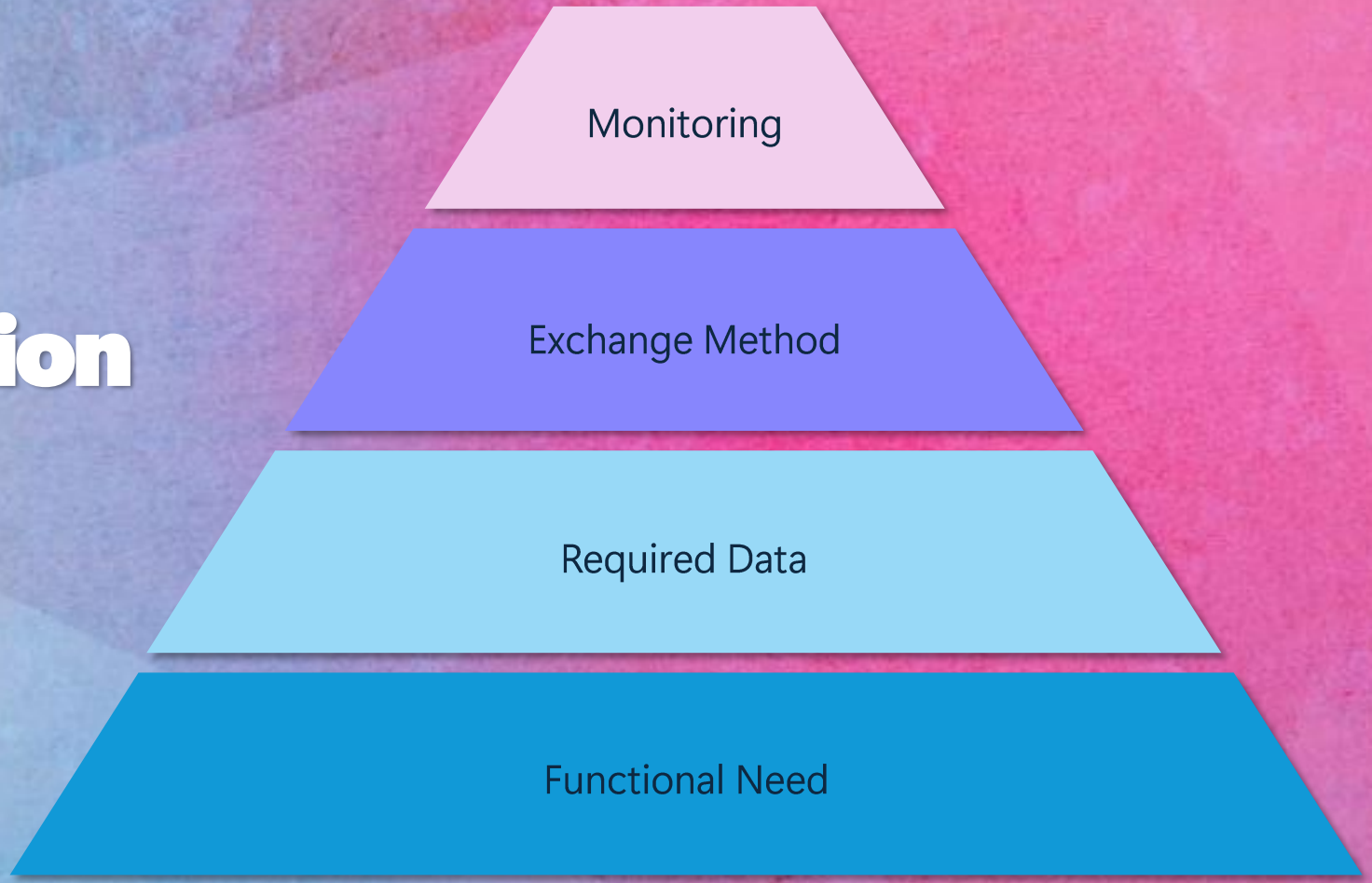
Hierarchy of Scalable Integration Design



Exchange Method



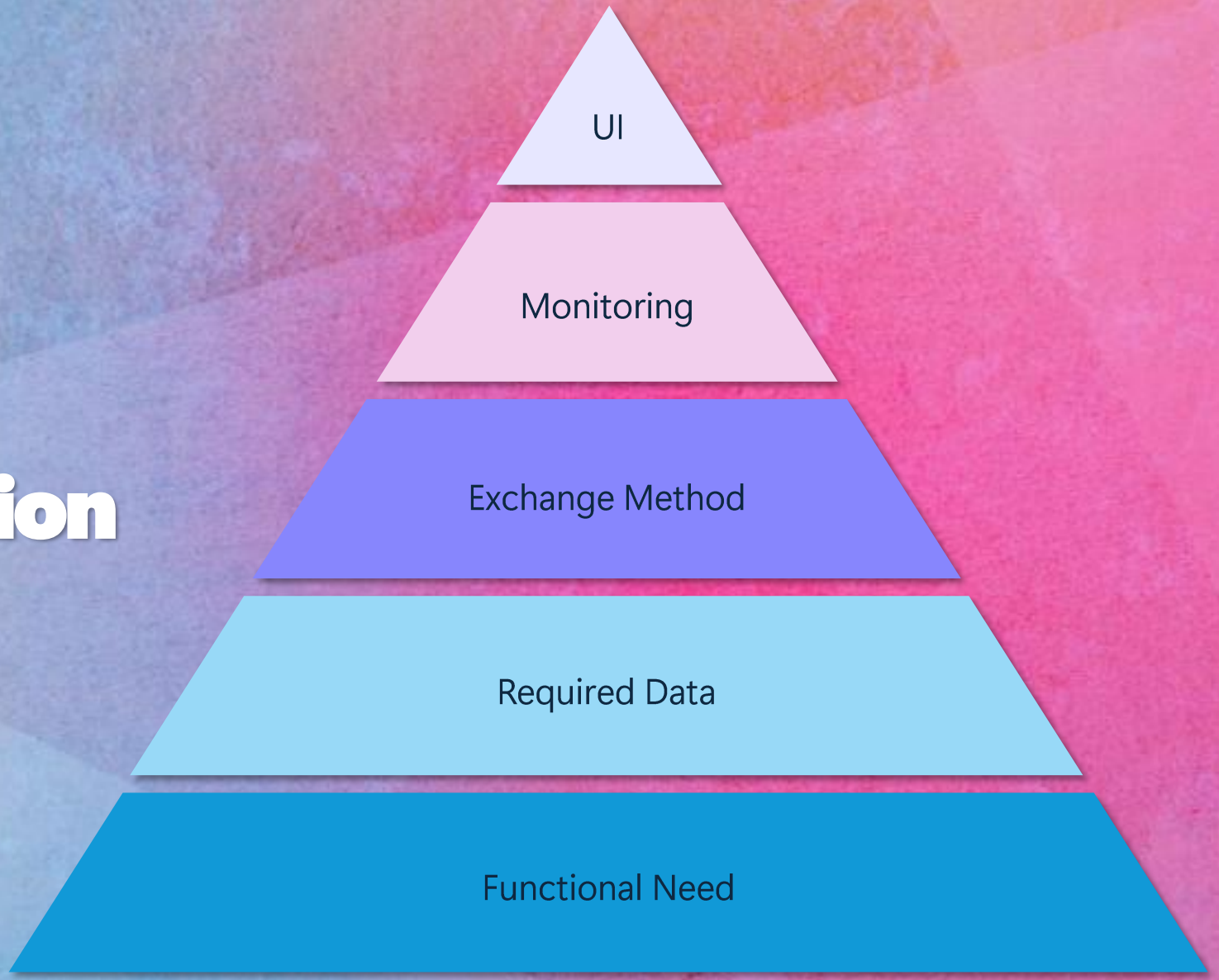
Hierarchy of Scalable Integration Design



Monitoring



Hierarchy of Scalable Integration Design



Exchange Method

Mock App

Designing a data visualization application

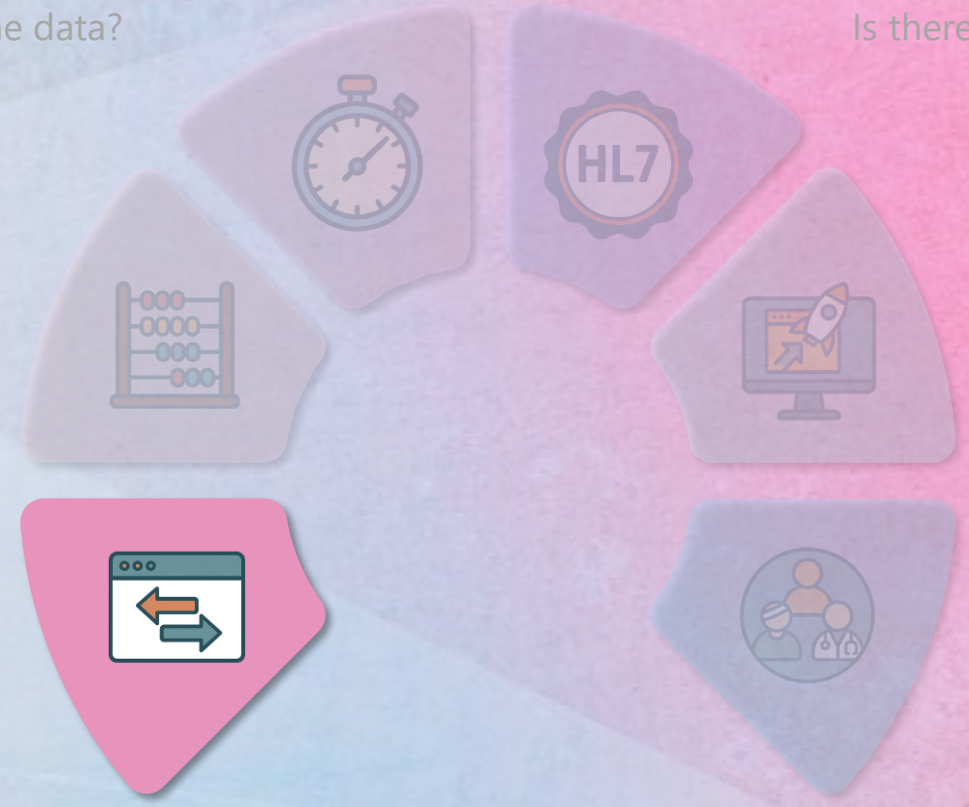
PICKING YOUR EXCHANGE METHOD

Recency

Do you need real-time data?

Standards

Is there an existing standard to use?



Volume

How much data do you need?

Trigger Type

Is the app launching from a specific context?

Direction

Will the data be pushed or pulled?

Audience

Who is consuming the data?

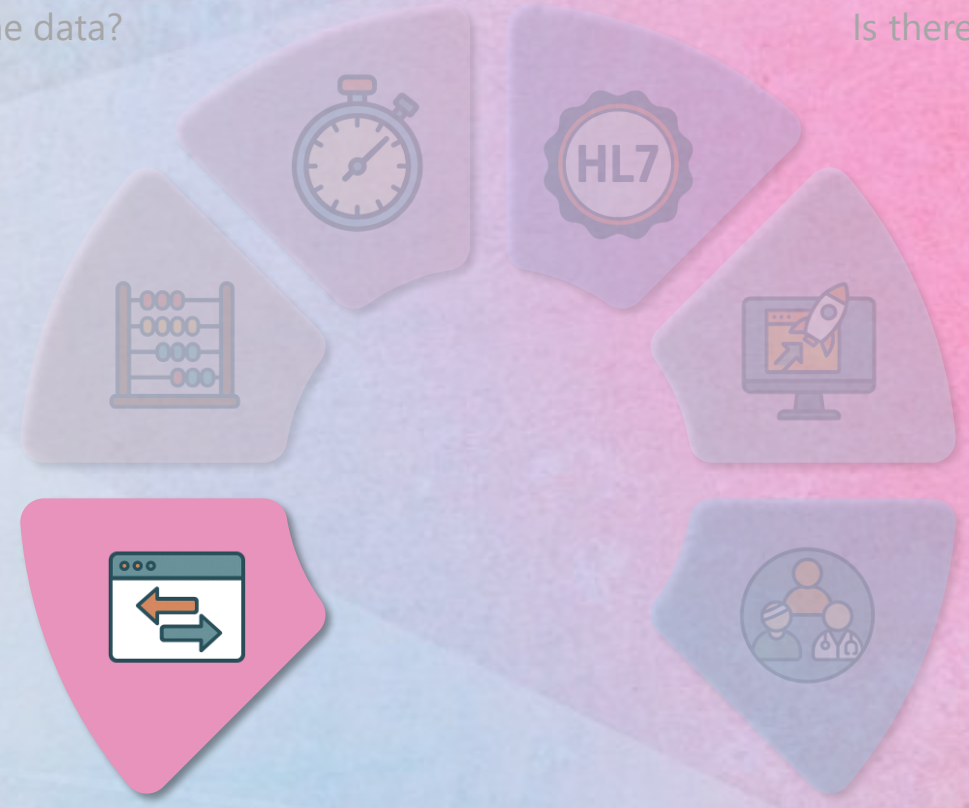
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EHR → App

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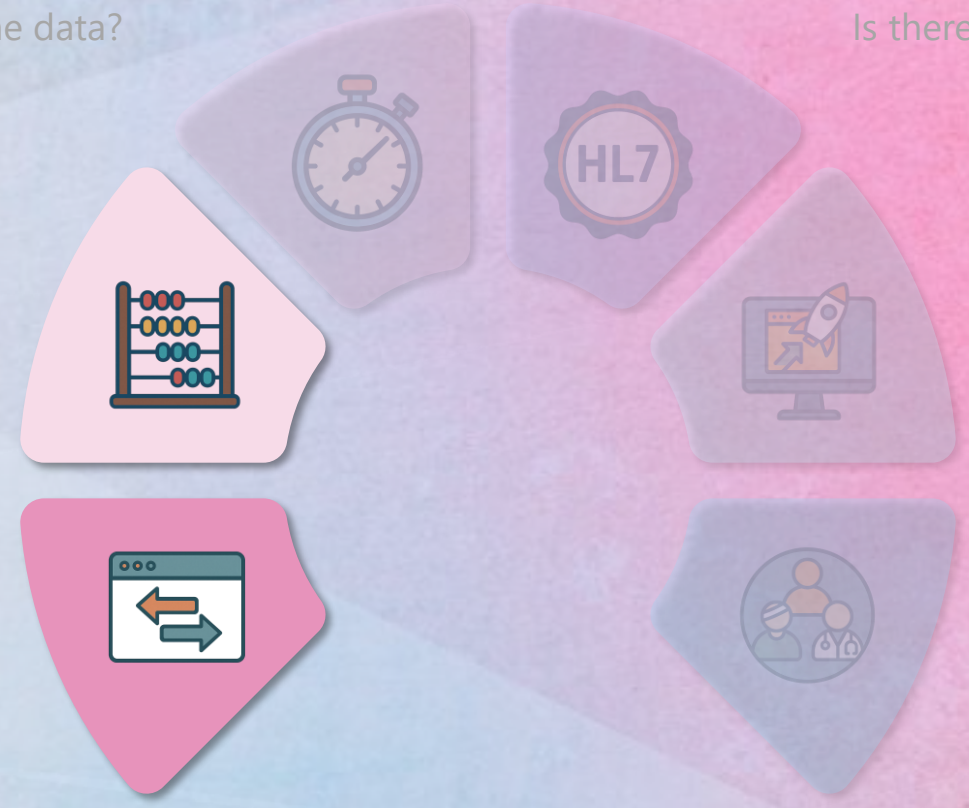
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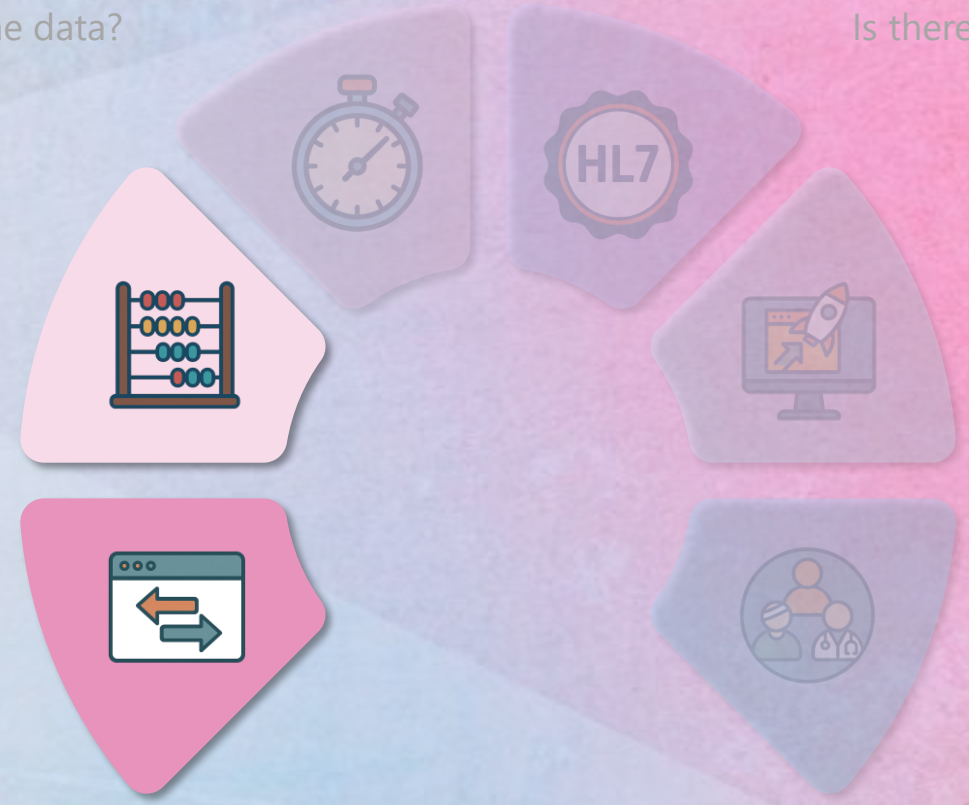
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Standards

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Existing Standards

Trigger Type

Is the app launching from a specific context?

Event-driven and patient launch

Audience

Who is consuming the data?

PICKING YOUR EXCHANGE METHOD

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Real-time

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EHR → App



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EHR → App



Standards

Is there an existing standard to use?

Existing standards

Trigger Type

Is the app launching from a specific context?

Event-driven and patient launch

Audience

Who is consuming the data?

Patient facing

Designing to Standards



System to System

	Recency	Volume	Direction	Standards	Trigger
HL7 Interfaces	Real-time	High	Push	✓	Event-driven
RESTful FHIR	Real-time	Low	Push/Pull	✓	On-demand
HL7 CDA	Varies	Moderate	Push/Pull	✓	Varies
NCPDP	Real-time	Moderate	Push/Pull	✓	Event-driven
X12	Real-time	Moderate	Push/Pull	✓	Event-driven

System to System

	Recency	Volume	Direction	Standards	Trigger
HL7 Interfaces	Real-time	High	Push	✓	Event-driven
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HL7 CDA			Push/Pull	✓	Varies
NCPDP			Push/Pull	✓	Event-driven
X12	Real-time	Moderate	Push/Pull	✓	Event-driven

For more information, check out...

OEC21

FHIRstarting

Today, October 21 at 3:30 PM

Contextual Launch

	Recency	Volume	Direction	Standards	Trigger
SMART Apps	Real-time	Low	Bidirectional	✓	On-demand
CDS Hooks	Real-time	Low	Bidirectional	✓	Event-driven
FHIRCast	Real-time	Low	Bidirectional	✓	Contextual

Contextual Launch

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SMART Apps	Real-time	Low	Bidirectional	✓	On-demand
CDS Hooks	Real-time	Low	Bidirectional	✓	Event-driven
FHIRCast	Real-time	Low	Bidirectional	✓	Contextual

For more information, check out…

OEC27

CDS Hooks – Clinical Decision Support at Point of Care

Tomorrow, October 22 at 9:30 AM

Other Exchanges

	Recency	Volume	Direction	Standards	Trigger
Bulk FHIR	Delayed	Moderate	Pull	✓	Batch
Reporting Tools	Delayed	High	Push/Pull	X	Batch
Other Web Services	Real-time	Low	Varies	X	Varies

Other Exchanges

	Recency	Volume	Direction	Standards	Trigger
Bulk FHIR	Delayed	Moderate	Pull	✓	Batch
Reporting Tools	Delayed	High	Push/Pull	X	Batch
Other Web Services	Real-time	Low	Varies	X	Varies

For more information, check out…

OEC17

Bulk FHIR

Today, October 21 at 2:30 PM

Benefits of Standards



Easier to Install



Scalable



Reduced Maintenance

Benefits of Standards



Easier to Install



Scalable



Reduced Maintenance

For more information, check out...

OEC29

How Industry Standards Can Solve Real-World Challenges

Tomorrow, October 22 at 10:30 AM

Designing for Speed

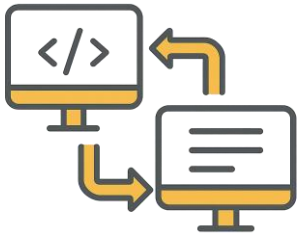
Across The Epic Community



more than

1 billion

messages per day



over

2 billion

API calls per day



with

3000+

apps connected

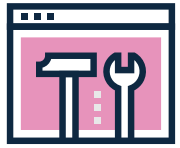
Best Practices



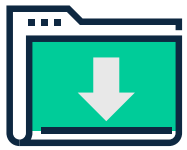
Narrow, Specific Calls



Efficient Parameters



Avoid Polling



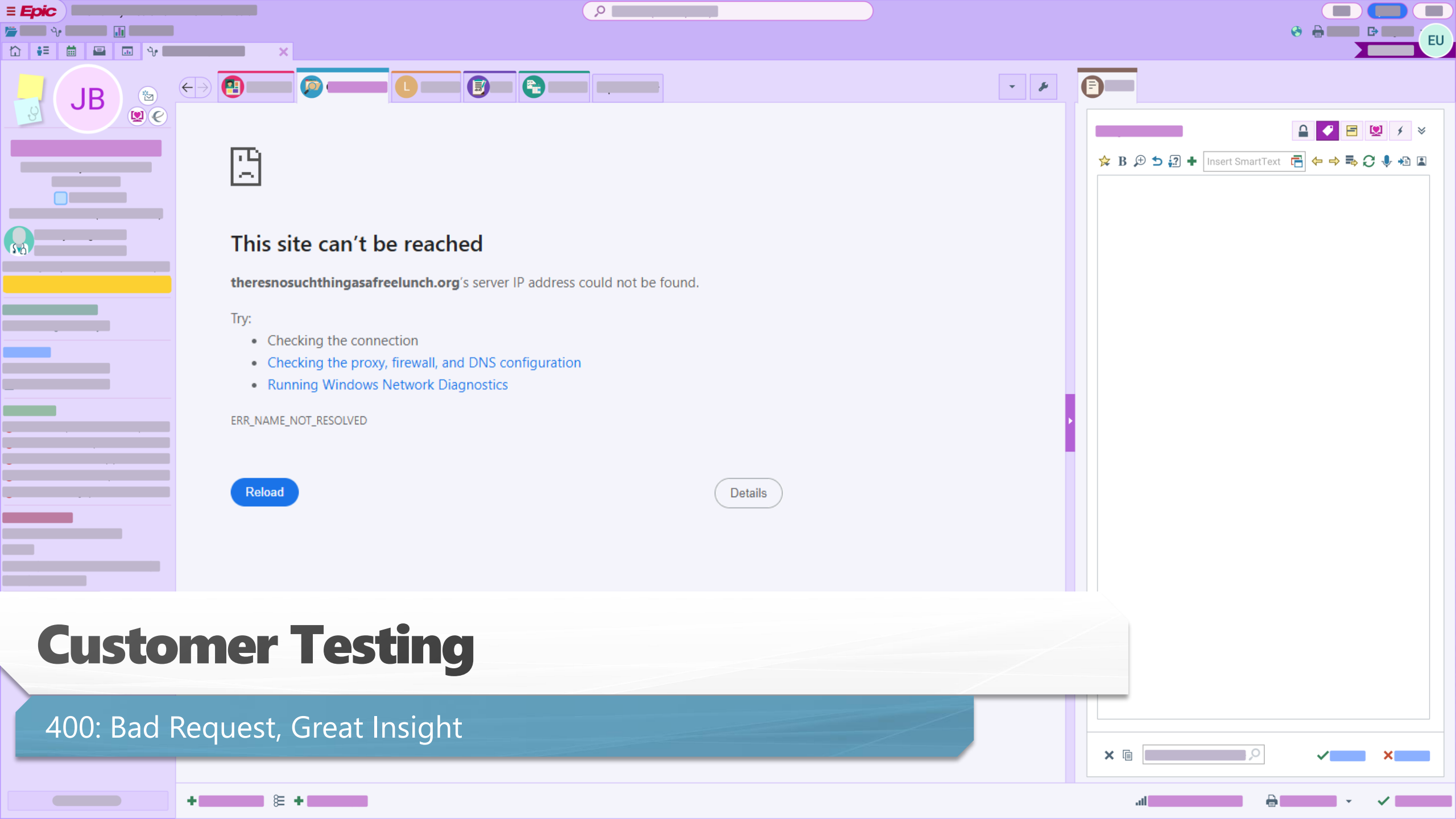
Cache Data



Volume Guardrails



Bundle API Calls

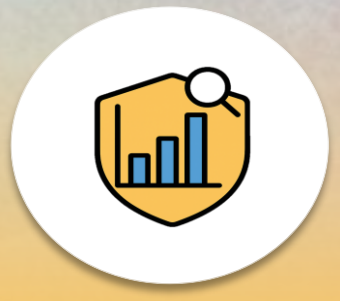


Customer Testing

400: Bad Request, Great Insight



Connectivity Testing



Functional Testing



Integrated Testing



Performance Testing

Customer Testing

Designing for Safety

Privacy and Security Considerations

In *the* News

Healthcare IT News

Aug 2025

193 million affected from data breach

Detroit Free Press

May 2023

More than 1 million affected by cyberattack

USA TODAY

Feb 2024

Health care data breaches hit 1 in 3 Americans last year: Is your data vulnerable?

BBC

Sep 2026

Major health system hacked

User Expectations



Secure By Default



Full Control



Zero Tolerance

Considerations

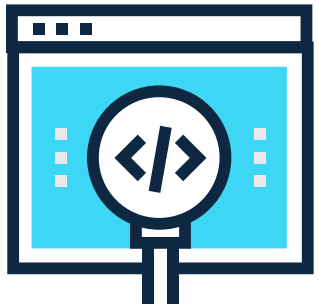


Authentication and Encryption

Considerations



Authentication and Encryption

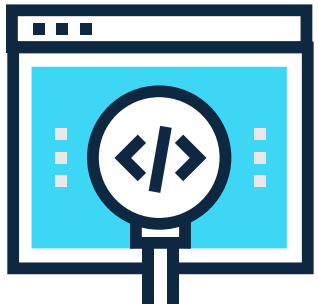


Observability and Auditing

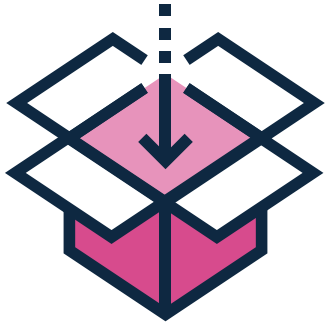
Considerations



Authentication and Encryption



Observability and Auditing

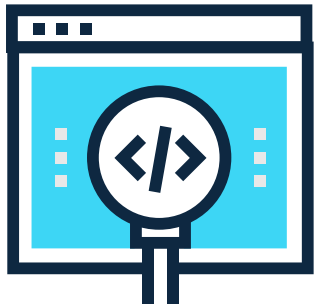


Caching Data

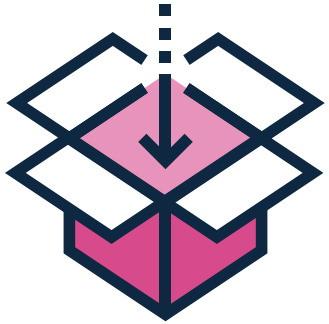
Considerations



Authentication and Encryption



Observability and Auditing



Caching Data



Locale-specific Legislation

TAKEAWAYS



Start with
Functional Need
not technology



Test with customers,
Performance
can't be an
afterthought



Design with high
User Expectations
for security and
privacy



Anyone can build a bridge that stands. It takes an engineer to build a bridge that barely stands.

Q&A



Ben Garstecki

Interfaces and Web Services

Epic

bgarstec@epic.com

Sessions Referenced

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OEC21

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How Industry Standards Can Solve Real-World Challenges

Tomorrow, October 22 at 10:30 AM

Q&A

OEC32

Wrap-Up: Putting It All Together

Form closes today at 5:00 PM

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