

AWS re:Invent

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AIM309

Transforming DevOps with AI

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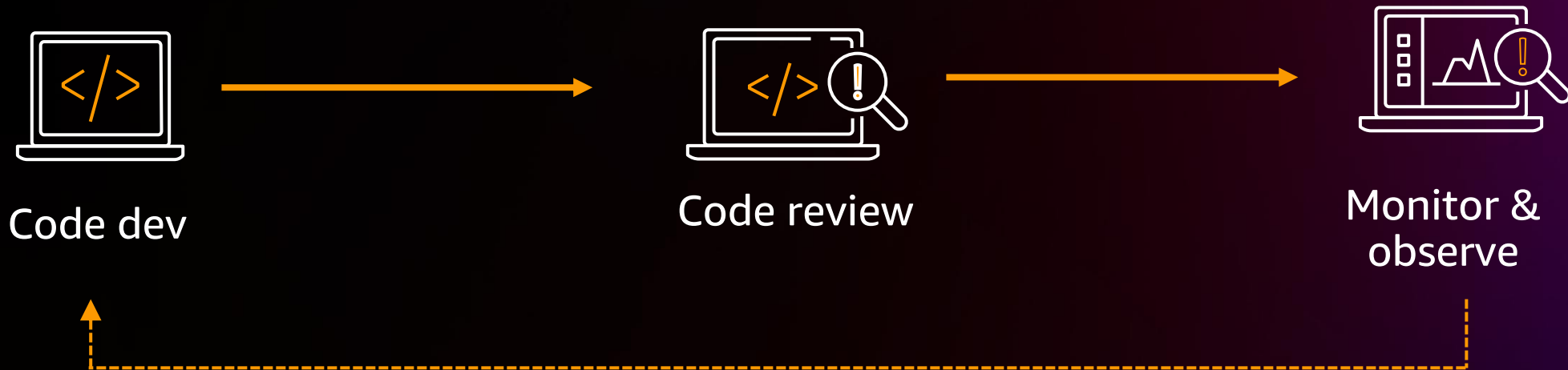


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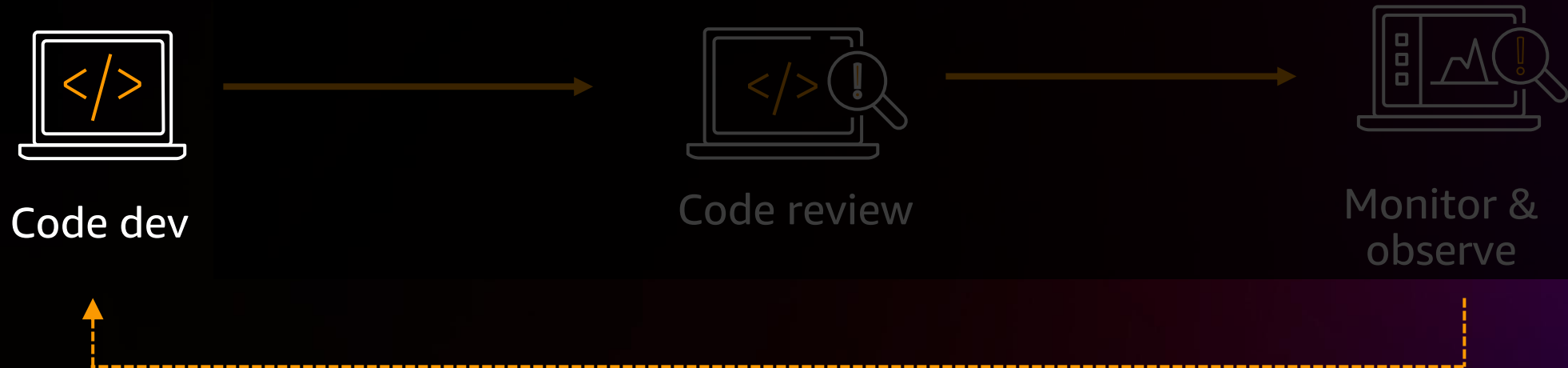
Agenda

- ➔ The DevOps cycle for code
 - ➔ AI in code development
 - ➔ AI in code review
 - ➔ AI In operations
- ➔ Demo
- ➔ Q&A

The DevOps cycle: From the perspective of your code



The DevOps cycle: AI for writing code



Developer challenges



**Multiple
programming
languages**



**Multiple
frameworks and
libraries**



**Numerous cloud
services and APIs**



**Identifying
relevant best
practices**

Amazon CodeWhisperer: ML-powered coding companion

Provides code recommendations based on contextual information like prior code and comments

GENERATES:

- Entirely new code based on context
- Code from plain English comments
- Complete functions

Available in all major integrated development environments (IDEs) as an extension

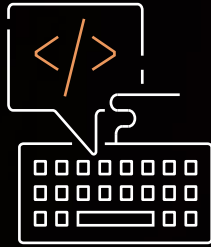
```
# Function to detect objects in an image stored in S3
def detect_object(bucket, key):
    """
    The operation recognizes the labels in the supplied image file.
    Args:
        bucket: The S3 bucket that contains the image file.
        key: The file name of the image.
    Returns:
        labels: The list of labels in the image.
    """

    try:
        response = rekognition.detect_labels(
            Image={"S3Object": {"Bucket": bucket, "Name": key}},
            MaxLabels=10,
            MinConfidence=75,
        )
    except ClientError as e:
        logging.error(e)
        return None
    return response["Labels"]
```

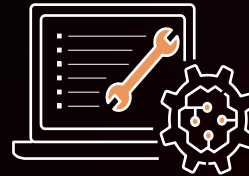
How often do you search for code on forums/documentation on a good coding day?

- ☐ Less than 5 times/day
- ☐ Between 5 and 15 times/day
- ☐ More than 15 times/day

Improving developer productivity



Languages: Python,
Java, JavaScript, C#,
TypeScript



IDEs: JetBrains, Visual Studio
Code, AWS Cloud9, AWS
Lambda console



**First-class support
for AWS APIs**

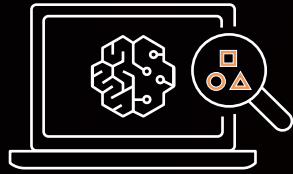
Which programming languages would you like to add?

- ☐ Go
- ☐ Kotlin
- ☐ C++
- ☐ Ruby
- ☐ PHP
- ☐ Other
- ☐ CodeWhisperer already supports my preferred languages

Which IDEs would you like to add?

- ☐ NeoVim
- ☐ Vim
- ☐ Visual Studio
- ☐ Other
- ☐ CodeWhisperer already supports my preferred IDE

Using AI in a responsible manner



Reference tracker



Security scan



Bias avoidance

Use cases

Develop next-gen applications

Build serverless applications and accelerate frontend and backend development

Use ML in your applications

Save time and effort by using CodeWhisperer to generate code to build and train your ML models

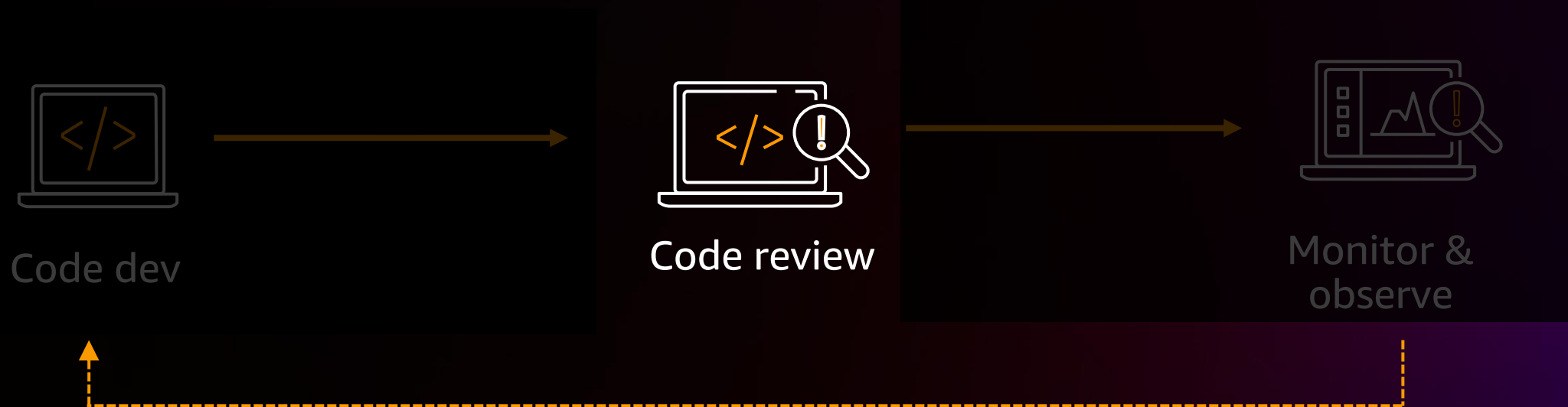
Build applications using AWS services

Speed up the development process with code recommendations for AWS APIs across the most popular services, including Amazon EC2, AWS Lambda, and Amazon S3

Automate unit test generation

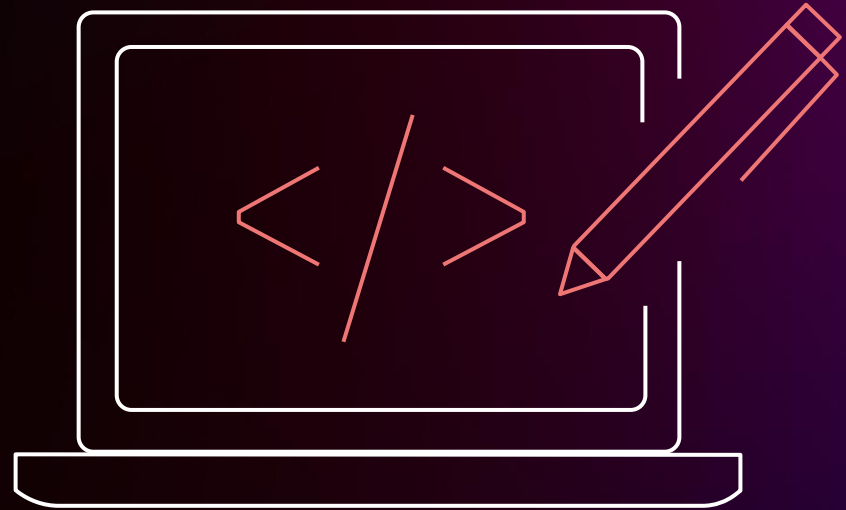
Offload writing repetitive unit test code – CodeWhisperer automatically recommends unit test code that matches your implementation code

The DevOps cycle: AI for code review



Code review challenges

Identify
problematic code

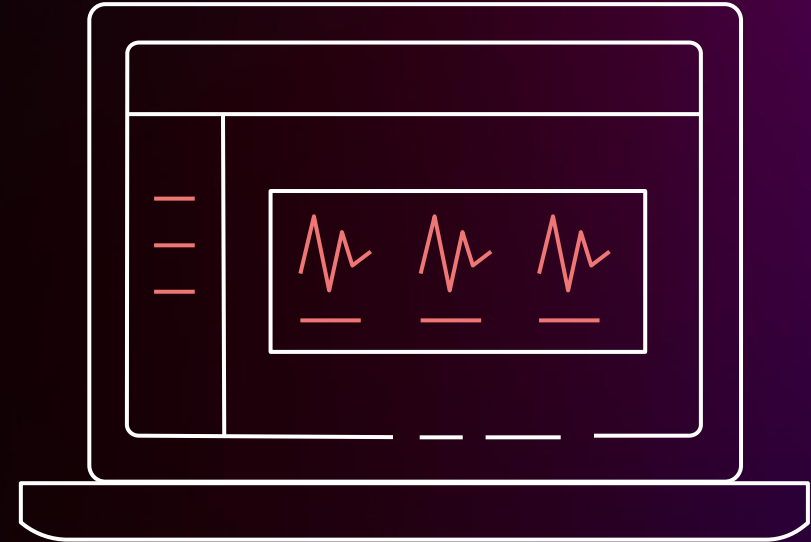


How many have had issues with code?

- ☐ Less than 5
- ☐ Between 5 and 15
- ☐ More than 15

Code review challenges

Security



How many have had security related issue with code?

- ☐ Less than 5
- ☐ Between 5 and 15
- ☐ More than 15

Introducing Amazon CodeGuru Reviewer

AUTOMATE CODE REVIEWS WITH ML-POWERED RECOMMENDATIONS



- Machine learning (ML)-powered static code analysis tool
- Improves code quality by scanning for critical issues & hard-to-find bugs
- Provides recommendations

CodeGuru Reviewer

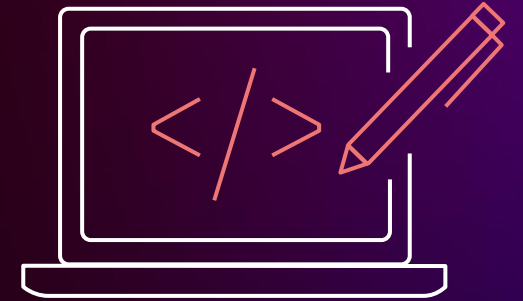
Static code analysis

AWS best practices

Concurrency

Resource leaks

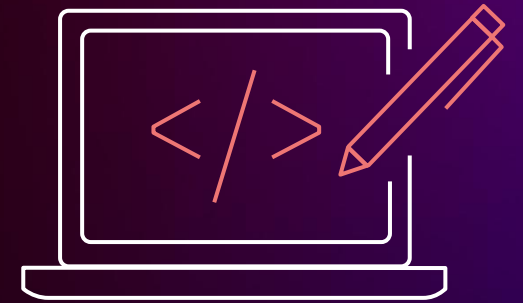
Security issues



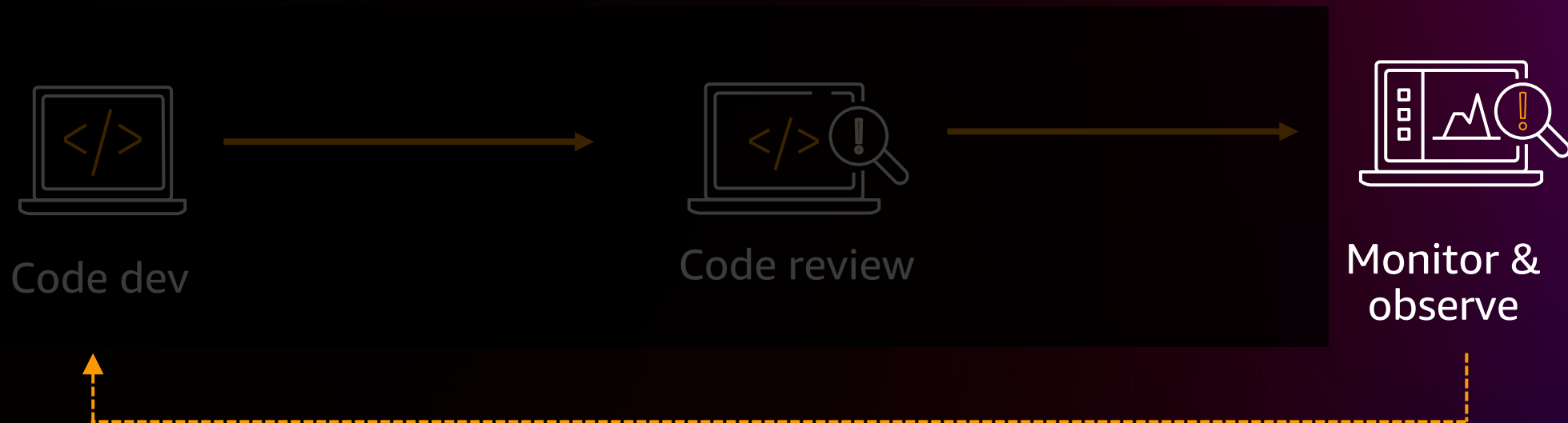
CodeGuru Reviewer + CodeWhisperer

Static code analysis

Security issues

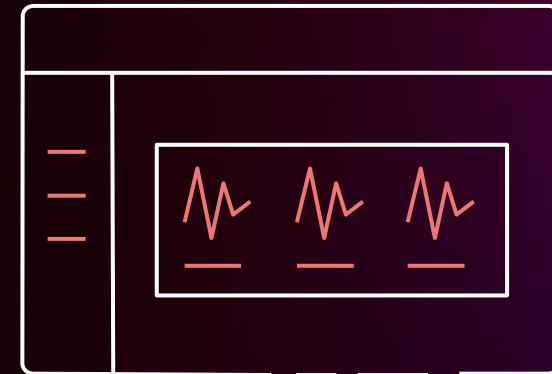


The DevOps cycle: AI for observability



Operational challenges

Keeping monitoring
up to date

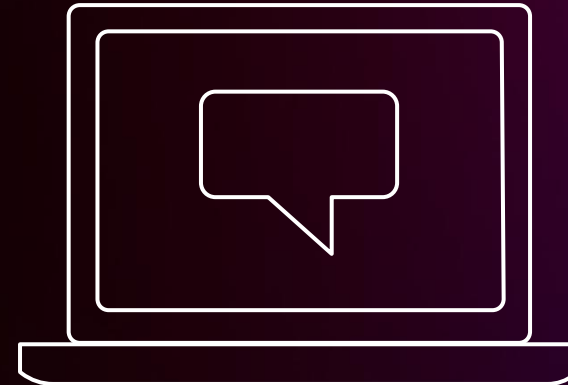


What tools do you use for monitoring?

- ☐ CloudWatch
- ☐ Datadog
- ☐ Splunk
- ☐ Dynatrace
- ☐ Other solutions

Operational challenges

Overwhelming
number of alarms



How do you decide what to monitor?

- ☐ Generic service coverage
- ☐ Based on past failures
- ☐ Guessing
- ☐ Other

“Everything fails all the time.”

Dr. Werner Vogels
CTO, Amazon.com



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Introducing Amazon DevOps Guru

ML-POWERED CLOUD OPERATIONS SERVICE TO IMPROVE APPLICATION AVAILABILITY



- Machine learning (ML)-powered service for developers and operators
- Improve application availability
- Reduce downtime
- Easy to use and scalable
- Proactive and reactive insights

The DevOps cycle: From the perspective of your code

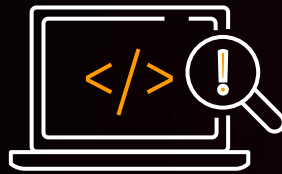


Code Dev

Amazon CodeWhisperer



Code Generation with AI



Code Review

Amazon CodeGuru



Code Review with AI



Monitor &
Observe

Amazon DevOps Guru



Monitoring with AI

AI for your DevOps cycle

- Context-based code recommendations
- Automate code reviews
 - Detect hard-to-find bugs
 - Code optimization
- Operation anomaly detection
 - Intelligent recommendations



Questions

How can we help expand what you are doing today?

Get started with CodeWhisperer free preview



**CodeWhisperer for
JetBrains**



**CodeWhisperer for
Visual Studio Code**



**CodeWhisperer for
AWS Cloud9**

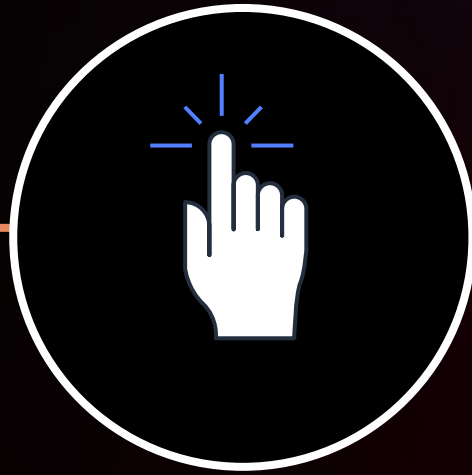


**CodeWhisperer for the
AWS Lambda console**

Get started with CodeGuru and DevOps Guru



Find us in the AWS
Management Console



Amazon CodeGuru
90 days free
up to 100K lines of code



Free
trial

Amazon DevOps Guru
7,200 AWS resource hours
per group per month for 3
months

Thank you!

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Please complete the session
survey in the **mobile app**

