Enhance Mobile Exploratory Testing with Performance Metrics

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About me

• Computer Engineer, software testing entrepreneur
• Co-founder & CEO of Apptim (www.apptim.com), Director and Board Member of Abstracta (www.abstracta.us)
• I like kitesurfing and plant-based cooking
• I enjoy supporting projects that promote more participation of women in tech
Agenda

1 Why mobile performance
   - User Experience
   - Mobile vs Web

2 Client-side performance
   - Metrics to measure
   - Tools

3 How and when to test
   - Demo
   - Q&A
1 Why mobile performance
For the first time ever, the number of mobile users is greater than the number of desktop users.

54% Mobile and tablet
46% Desktop
Mobile (Web) Performance impact in User Experience

Slow pages are the #1 issue that mobile users complain about

85% of mobile users expect pages to load faster than in desktop

Mobile native apps can run up to 5x faster than websites
Mobile app or mobile website?

Higher consumer spending
$50.1B first half of 2020
Increased first-time app installs
26.1% increase year-over-year

➢ The right choice depends on the business objectives
Benefits of mobile websites

- Accessible for everyone
- Not need to update
- Cost-effective
Benefits of mobile apps

✓ Better personalization
✓ Works offline
✓ Intuitive interface, works faster
✓ Use of mobile device features: camara, gps, etc.
New technologies to consider

- AMP - https://amp.dev/
- PWA - https://web.dev/what-are-pwas/
Mobile vs Web

✓ Mobile apps use frameworks provided by the OS systems (Android/iOS)

✓ Web apps follow a client-server architecture where the client runs in a web browser
2 Client-side performance
What can we measure on a web app?

- JavaScript parsing times
- Image sizes
- Loading and rendering below-the-fold content
- Caching policies
Android versions
Android versions in 2020

![Android version share in 2020 chart](image-url)
iOS versions

![iOS versions chart]

- May 2016: 11% Earlier, 5% iOS 8, 5% iOS 9, 16% iOS 10, 2% iOS 11, 2% iOS 12, 84% iOS 13
- October 2016: 8% Earlier, 5% iOS 8, 5% iOS 9, 16% iOS 10, 2% iOS 11, 9% iOS 12, 60% iOS 13
- February 2017: 36% Earlier, 5% iOS 8, 5% iOS 9, 16% iOS 10, 2% iOS 11, 7% iOS 12, 79% iOS 13
- July 2017: 30% Earlier, 5% iOS 8, 5% iOS 9, 16% iOS 10, 2% iOS 11, 2% iOS 12, 87% iOS 13
- September 2017: 28% Earlier, 5% iOS 8, 5% iOS 9, 16% iOS 10, 2% iOS 11, 2% iOS 12, 89% iOS 13
- January 2018: 28% Earlier, 5% iOS 8, 5% iOS 9, 16% iOS 10, 2% iOS 11, 7% iOS 12, 65% iOS 13
- May 2018: 14% Earlier, 5% iOS 8, 5% iOS 9, 16% iOS 10, 2% iOS 11, 2% iOS 12, 81% iOS 13
- October 2018: 11% Earlier, 5% iOS 8, 5% iOS 9, 16% iOS 10, 2% iOS 11, 7% iOS 12, 50% iOS 13
- August 2019: 7% Earlier, 5% iOS 8, 5% iOS 9, 16% iOS 10, 2% iOS 11, 2% iOS 12, 88% iOS 13
- October 2019: 9% Earlier, 5% iOS 8, 5% iOS 9, 16% iOS 10, 2% iOS 11, 5% iOS 12, 50% iOS 13
- June 2020: 6% Earlier, 5% iOS 8, 5% iOS 9, 16% iOS 10, 2% iOS 11, 2% iOS 12, 13% iOS 13

#PNSQC2021  #perfmaters #mobiletesting | @sopalamarchuk
What can we measure on a mobile app?

**Resource Usage**
- % CPU
- Memory (MB)
- Data sent and received (KB)
- % Battery Usage

**Rendering**
- Rendering times (ms)
- Frames per second (fps)
- Render lag (janks)

**Errors**
- Exceptions
- ANRs (Android)
- Crashes

**Response Times**
- Transactions
- App Startup
3 What tools can we use?
Web apps

✓ Lighthouse (Google)
✓ APMs (Application Performance Management)
Native apps

Android Studio

Instruments (Xcode)

Apptim Desktop
3 Demo
4 When should we start testing app performance?
As soon as possible!

This will help you:

- Understand how the app behaves, familiarize yourself with these metrics and see how they change over time
- Identify early on what changes in the app affect its performance
- Prevent new performance issues from reaching end users
Questions?

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Thank you!

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