

ANDROID REAL LIFE EXPERIENCE IN PRODUCTION

How an application
developer can survive
in the chaotic Android
ecosystem



CLASSE 300X



Connected video-entry phone

Easy installation and configuration



Sold tens of thousands of units



+80K app installation

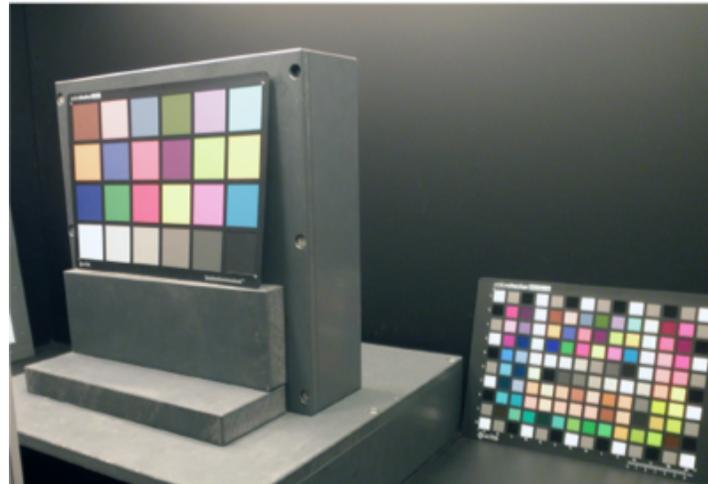


+50 countries



DEVELOPMENT PHASE

- Very few devices
- Controlled environment
- Direct access to everything (devices, cloud, network)
- Possibility to deploy and test in real time
- Possibility to have all the information you need



MARKET PHASE



Many more devices that you can image

A lot of OS customizations

You can control your application

But you can NOT control:

- The environment

- The smartphone

- The network

Time to market is critical

WHAT WE CAN DO TO MINIMIZE THE STRESS AND PERFORM WELL IN PRODUCTION?

Let's see some cases we faced
and some lessons we learned!

APPARENTLY TWINS



PROBLEM



App crashes on
specific
smartphone
model

ANALYSIS

- Get logs → Native crash on audio stack
- Buy the same device → The app doesn't crash
- ?!?! → same model but different manufacturer

SOLUTION

Write different code for different models

android.os.Build

exposes infos like: language, manufacturer, brand, model, OS version, HW version, etc.

Write always these infos in your logs,
*also if you think you don't need them. They
(for sure) will save your time in the future*

CAN YOU HEAR ME?



PROBLEM



Real time audio:
30% of Android
devices behave
different from
each others

ANALYSIS

- Different audio HW & OS customization:
- HW, SW or no AEC at all
 - Different latency and jitter
 - Different quality of speakers and mics

SOLUTION

Decline the code for each device after
audio tests (using anechoic chamber for
best result)

Real-time audio communication requires high skill

→ *we suggest you to rely on experts*

PREVENTION IS BETTER THAN CURE



PROBLEM



New OS android version has been released. Users started to report anomaly on app

ANALYSIS

Checking new OS release notes:

- DOZE functionality that kills background activities
- Can't retrieve unique identifiers like Wi-Fi MAC address

SOLUTION

Apply NEW best practices to react on network events (push notification) and to manage unique identifiers

*Try to guess the direction **android platform** is taking, and try **not to collide** with it to prevent complex architectural changes on your source code*

FASTER THAN LIGHT



PROBLEM



Immediately after roll out of a new version, app started crashing

ANALYSIS

Thanks to automatic tool **Crashalytics** we noticed a peak of crashes
→ Trivial problem
(`NullPointerException`)

SOLUTION

Released a new version soon after, before became a disservice

*Always use tools to **monitor** your app in **real time**, and keep both eyes on reports right after the deployment of a new release on Android store!*

1 IS NOT 10K



PROBLEM



Customers blaming our app was draining the battery too much

ANALYSIS

Server reached the maximum number of connections at the same time → Denied new sockets

While external library kept up creating new requests to server → Loop and thus battery drain

SOLUTION

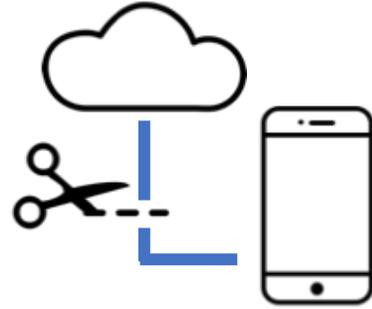
Patch library to relax opening of sockets on app side

*Behavior of a single instance of your app is not the same of 10000. Do good **load tests** before going on the market, and by the way... Don't trust external libraries blindly*

WHERE IS THE LEAK?!



PROBLEM



Connection issue
→ Sometimes app loses connection to server

ANALYSIS

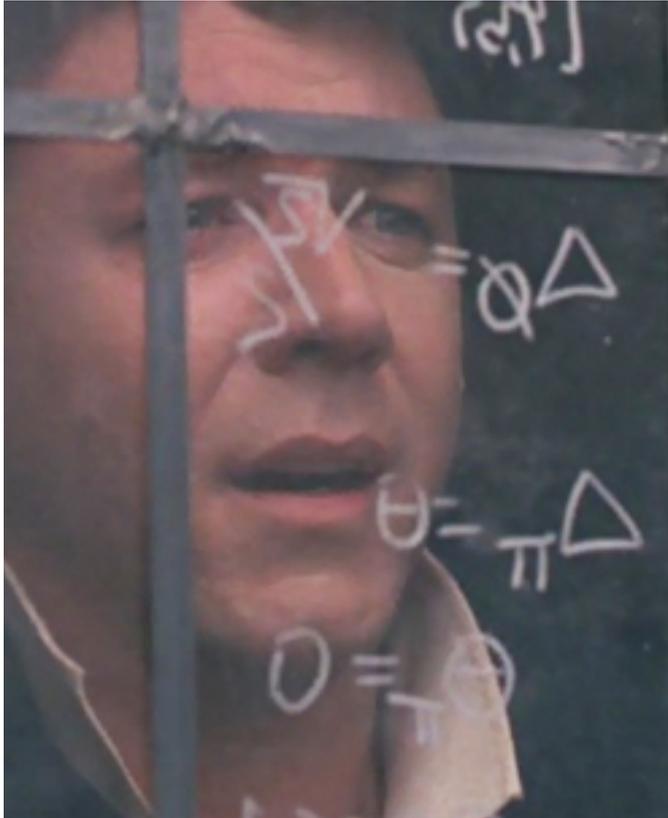
Connection can be lost anywhere anytime
→ Lot of time lost tracing the source of problem
→ Clustering the information we found out the issue was happening in a specific country and specific ISP

SOLUTION

Contact the network operator to stop traffic shaping and whitelist our server

*Sometimes the issue is for real not your fault! Checkout what external world is doing with your data, probably **ISPs** or **carriers** act against you*

CODING IS NOT MATH



PROBLEM



Ringtone always plays GOOD except for one smartphone model

ANALYSIS

Warming up Mic and Speakers paths with AudioRecord and AudioTrack was changing internal mode of audio library in a way to discard MODE_RINGTONE

SOLUTION

Keep MODE_IN_COMMUNICATION all the time, and just switch on speakerphone letting Android to mix the Ringtone to the right stream.

*If your code doesn't work on a **specific device**, take it easy! Probably is not your fault. Search on **Stackoverflow**, it could be a known issue due to vendor implementation of Android APIs*

LET CUSTOMER GET IN TOUCH



SUGGESTIONS



Direct contact with customer is profitable for everyone



Add a "report a problem" form into the app → used much more we expected → more helpful than reviews like: *"App doesn't work! You deserve 0 stars, but it's not possible, so I give you 1 star!"*



Use Beta program to release the new version only to some customers to verify the fix



Example: a blind person contacted us for asking the TalkBack functionality on the door lock button (custom component)...

Give the **customer** the possibility to **contact you** and don't hesitate to use the **Beta** program!

**TRUST CUSTOMERS,
BUT...**

... DON'T TRUST EVERYTHING THEY TELL YOU

An astronomer, a physicist and a mathematician are on a train in Scotland.

The astronomer looks out of the window, sees a black sheep standing in a field, and remarks, "How odd. All the sheep in Scotland are black!"

"No, no, no!" says the physicist. "Only some Scottish sheep are black."

The mathematician rolls his eyes at his companions' muddled thinking and says, "In Scotland, there is at least one sheep, at least one side of which appears to be black from here some of the time."

Often the feedback come to us from an astronomer, our cleverness is to act like a mathematician.

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THANK YOU!

Feel free to contact us for any question doubt or proposals!

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Images taken from IMDB.com