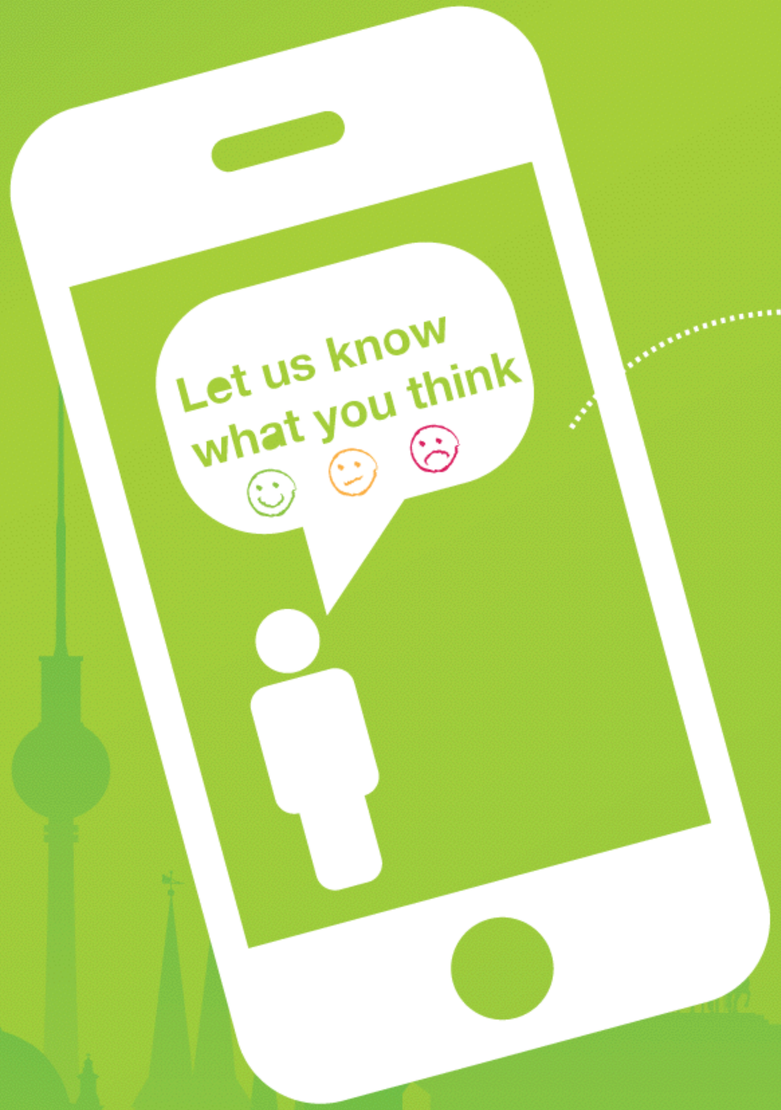
Tales from Making Mobile Games

Jesper Richter-Reichhelm (@jrirei)

goto; conference



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to rate sessions
and ask questions

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A True Story

The Launch of Agent Alice on iOS

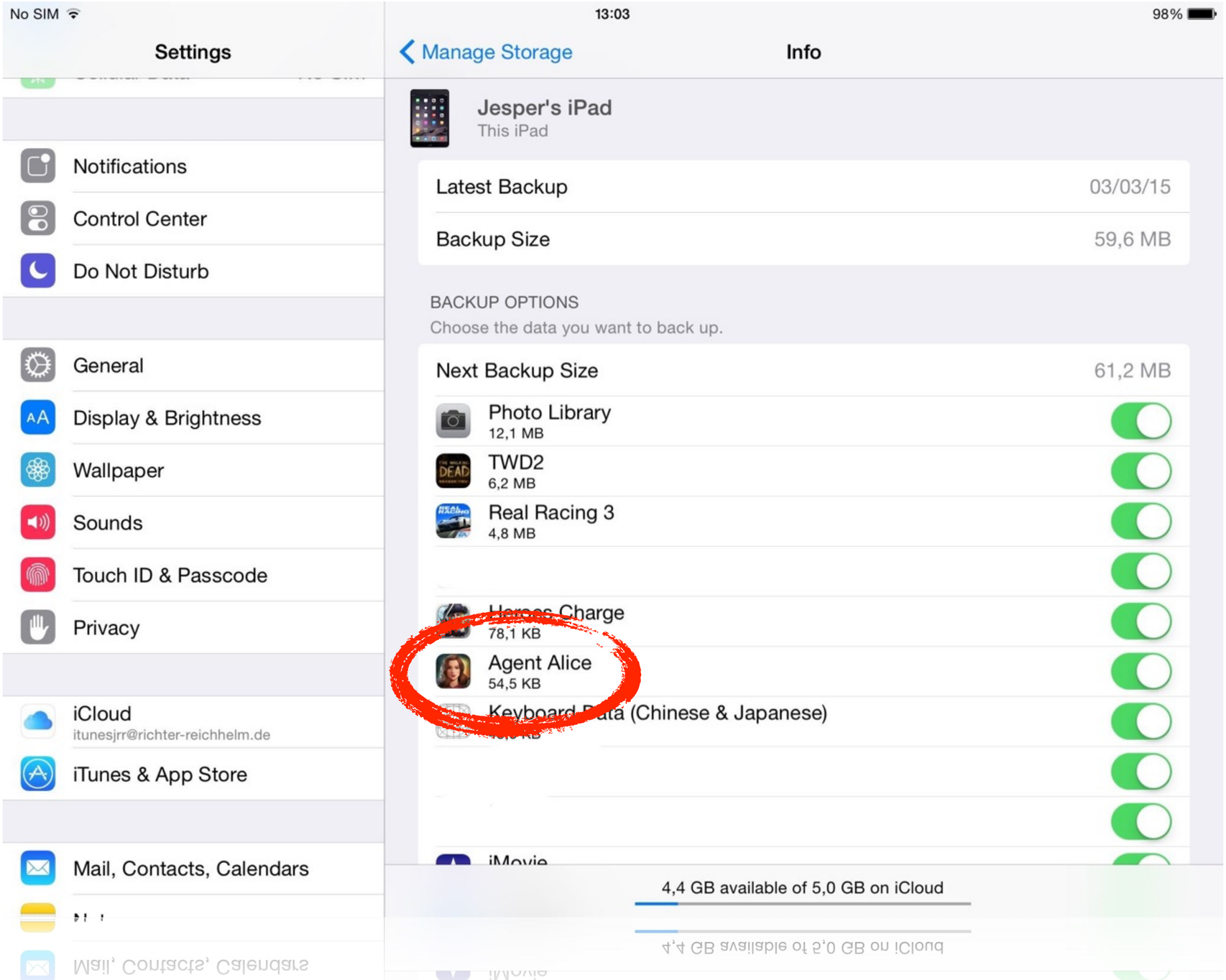
Cushions
Fedora
Corpse
Sunglasses
3
12

Concept start August 2013
Production start March 2014
Internal release October 2014

Launch at February 26th
Both iOS & Android

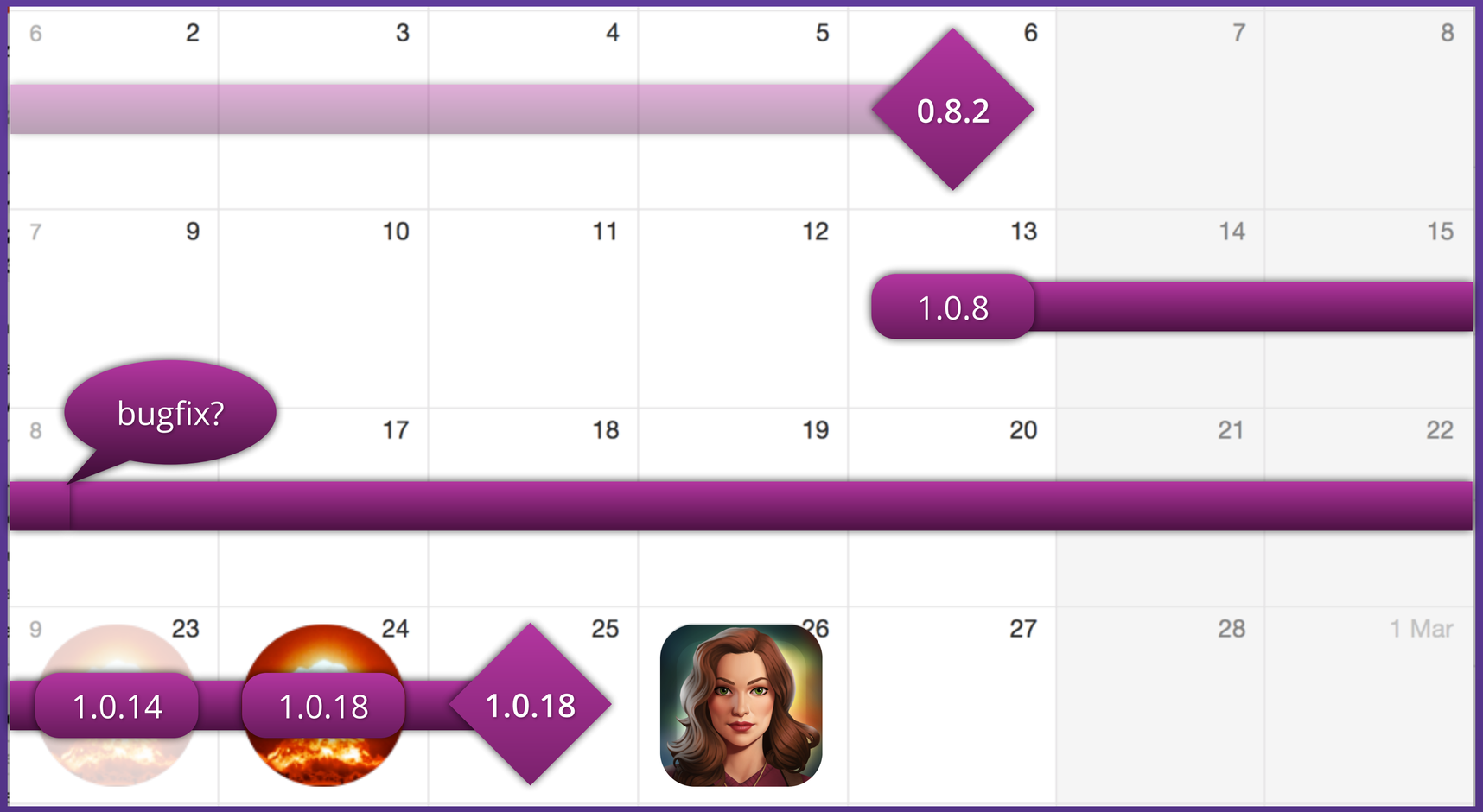
February 2015

6	2	3	4	5	6	7	8
					0.8.2		
7	9	10	11	12	13	14	15
					1.0.8		
8	bugfix?	17	18	19	20	21	22
9	23	24	25	26	27	28	1 Mar


No SIM
13:03
98%
Settings
Manage Storage
Info
Notifications
Control Center
Do Not Disturb
General
Display & Brightness
Wallpaper
Sounds
Touch ID & Passcode
Privacy
iCloud
itunesjrr@richter-reichhelm.de
iTunes & App Store
Mail, Contacts, Calendars
Jesper's iPad
This iPad
Latest Backup
03/03/15
Backup Size
59,6 MB
BACKUP OPTIONS
Choose the data you want to back up.
Next Backup Size
61,2 MB
Photo Library
12,1 MB
TWD2
6,2 MB
Real Racing 3
4,8 MB
78,1 KB
Agent Alice
54,5 KB
(Chinese & Japanese)
4,4 GB available of 5,0 GB on iCloud

Episode:
01 02
48/75
00:08
13
1
Hints
Energy
Cash
+60
€1,99
+150
+10 FOR FREE
MOST POPULAR
€4,99
+300
+30 FOR FREE
€9,99
SHOP

February 2015



3 million downloads on weekend
Top 1 game in UK, DE, FR
Top 2

What we have learned

Test with TestFlight

- HockeyApp is not sufficient anymore

Expect to be rejected

- Don’t rely on previous results
- Have a fallback version ready for launch
- Finish development 4 weeks before launch

Making Mobile Games

mobile network

massive scale

two platforms

max download size

Google Play

paid user acquisition

long term retention

ad publishing

mobile operation

cheating

Facebook

Game Center

free 2 play

continuous development

complex configuration

game as a service

low latency

thousands of devices

offline mode

multi device handling

mobile network

massive scale

two platforms

max download size

Google Play

paid user acquisition

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Facebook

Game Center

free 2 play

continuous development

complex configuration

game as a service

low latency

thousands of devices

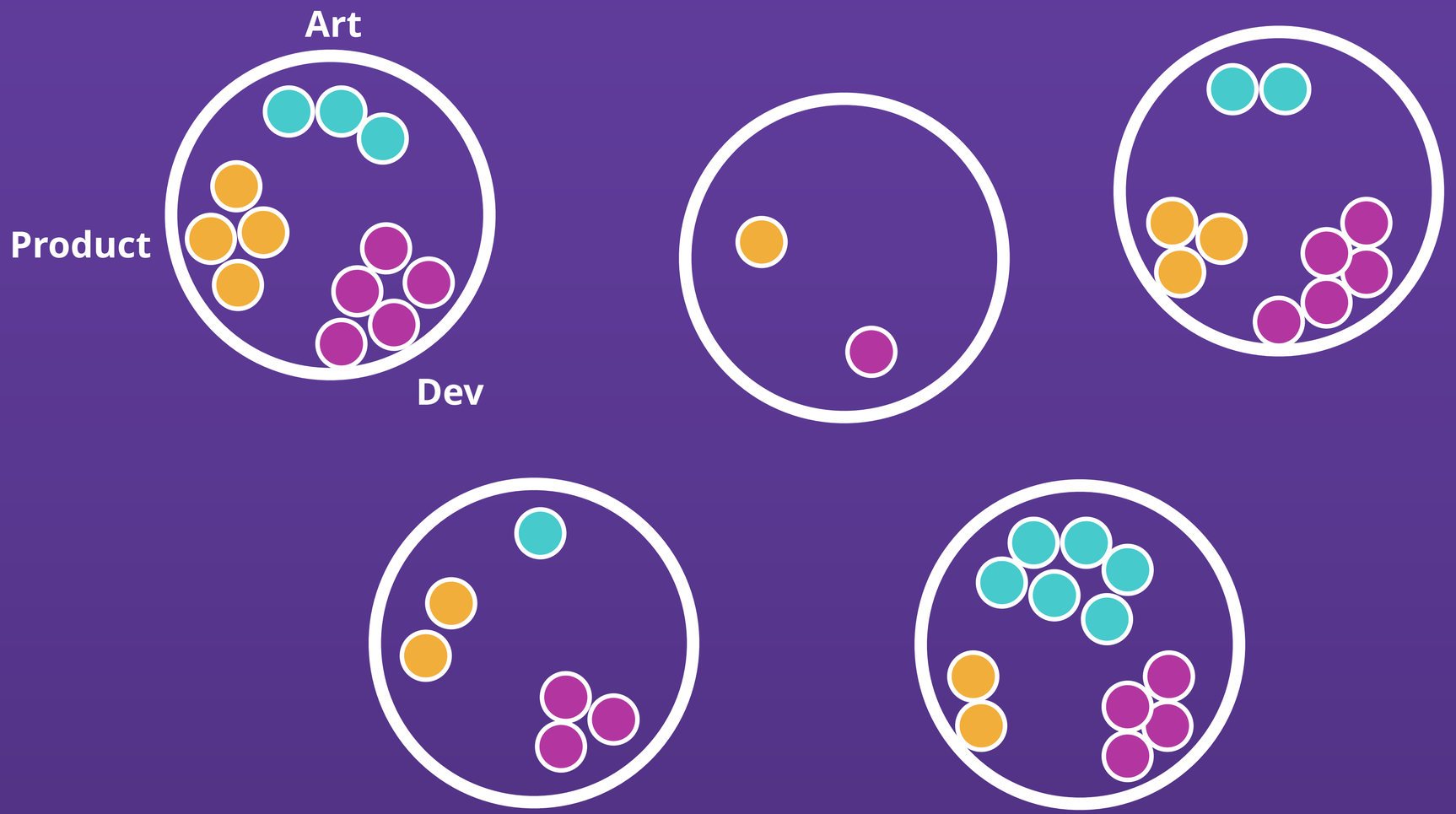
offline mode

multi device handling

Two Platforms

iOS and Android

Independent Teams



Flash on Facebook

HTML

Cross Platform Development

COCOS2D

Chase Ports

Cross Compilation

Cross Platform Development

What we have learned

HTML5 is not good enough

... for complex games

Chase ports

... are a good way to kill team morale

True cross platform development rocks

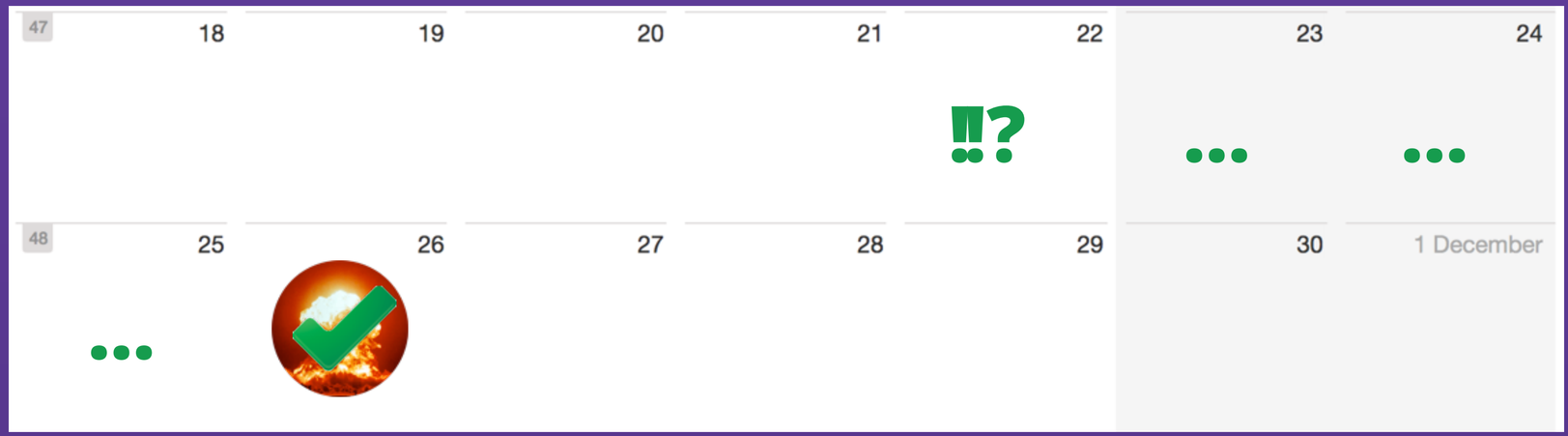
... even with Unity

Mobile Operation

The Art of Running an App

Jelly
Splash

November 2013



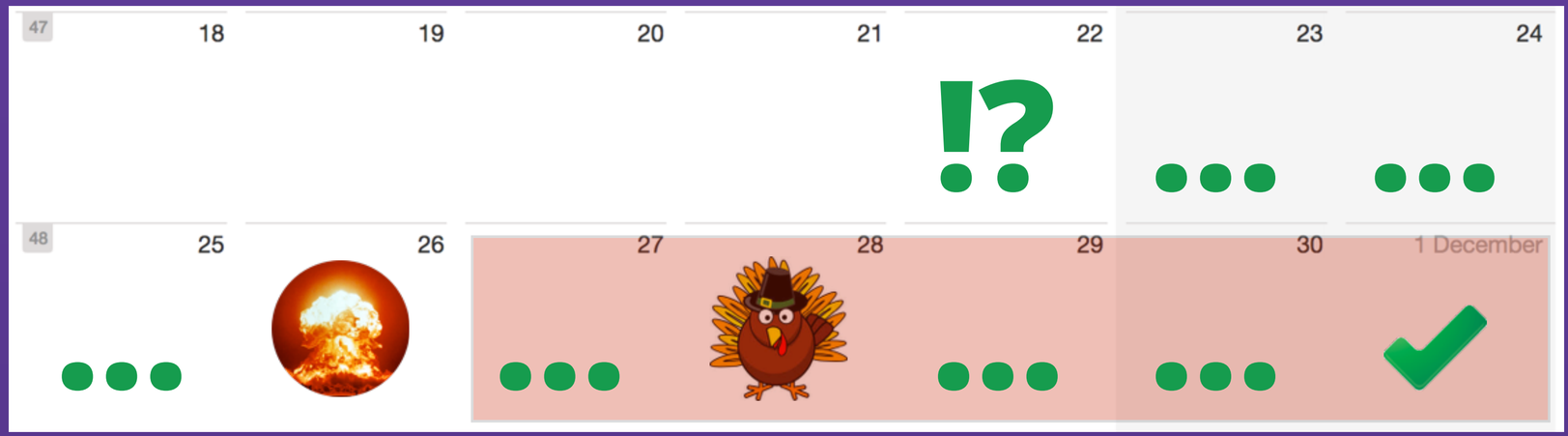
November 2013

47	18	19	20	21	22	23	24
					!?	...	...
48	25	26	27	28	29	30	1 December
	...		...				

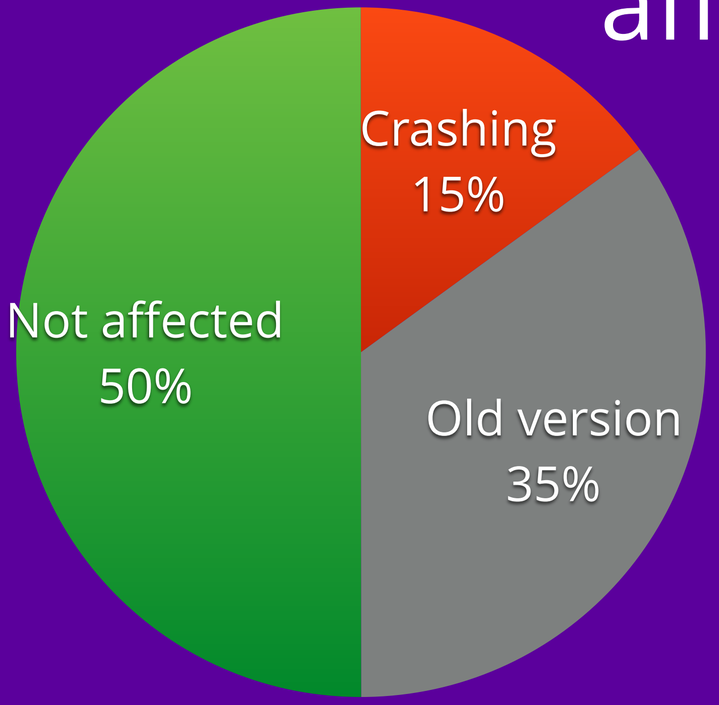
“In recognition of your incredible efforts and achievements, I’m happy to announce that we’re extending the Thanksgiving holiday this year.”

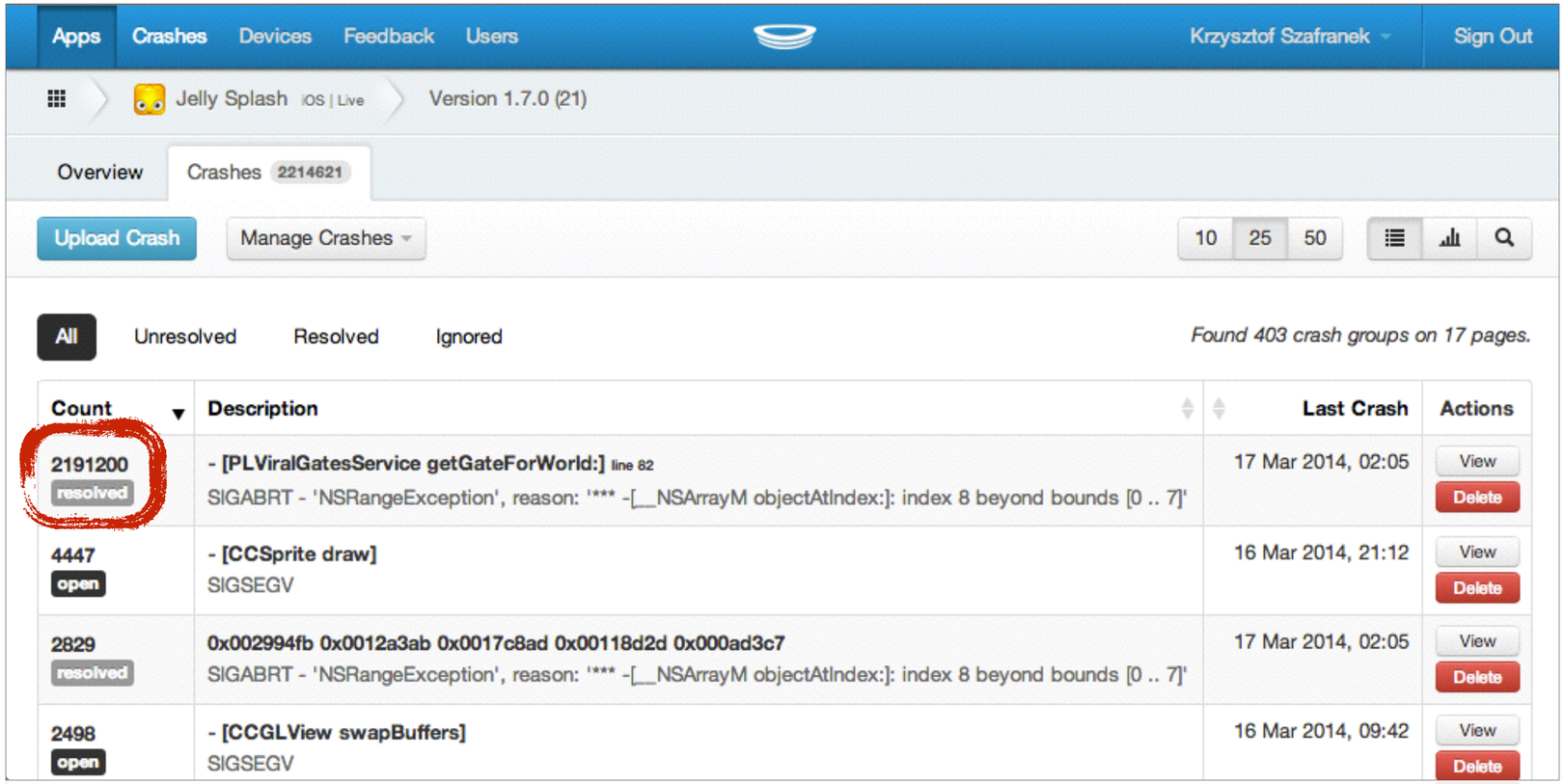
- Tim Cook

November 2013



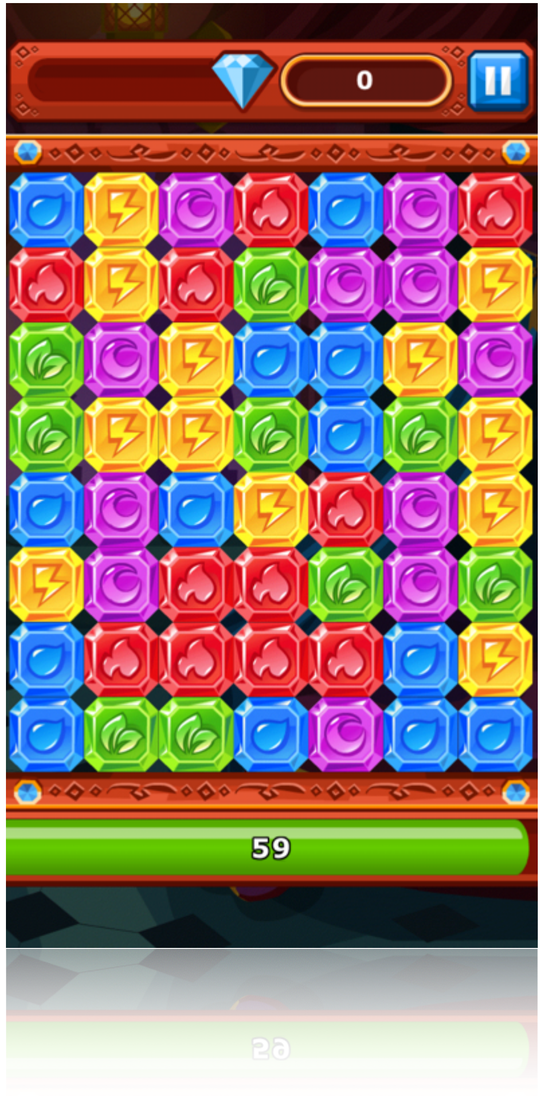
>200,000 users affected




Apps
Crashes
Devices
Feedback
Users
Krzysztof Szafranek
Sign Out
Jelly Splash iOS | Live
Version 1.7.0 (21)
Overview
Crashes 2214621
Upload Crash
Manage Crashes
10
25
50
All
Unresolved
Resolved
Ignored
Found 403 crash groups on 17 pages.
Count
Description
Last Crash
Actions
2191200
resolved
- [PLViralGatesService getGateForWorld:] line 82
SIGABRT - 'NSRangeException', reason: '*** -[__NSArrayM objectAtIndex:]: index 8 beyond bounds [0 .. 7]'
17 Mar 2014, 02:05
View
Delete
4447
open
- [CCSprite draw]
SIGSEGV
16 Mar 2014, 21:12
View
Delete
2829
resolved
0x002994fb 0x0012a3ab 0x0017c8ad 0x00118d2d 0x000ad3c7
SIGABRT - 'NSRangeException', reason: '*** -[__NSArrayM objectAtIndex:]: index 8 beyond bounds [0 .. 7]'
17 Mar 2014, 02:05
View
Delete
2498
open
- [CCGLView swapBuffers]
SIGSEGV
16 Mar 2014, 09:42
View
Delete

481.150
DIAMOND DASH
27

Control: 50%



Test A: 50%

2011

6	2	3	4	5	6	7	8
7	9	10	11	12	13	14	15
8	16	17	18	19	20	21	22
9	23	24	25	26	27	28	1 Mar

100%

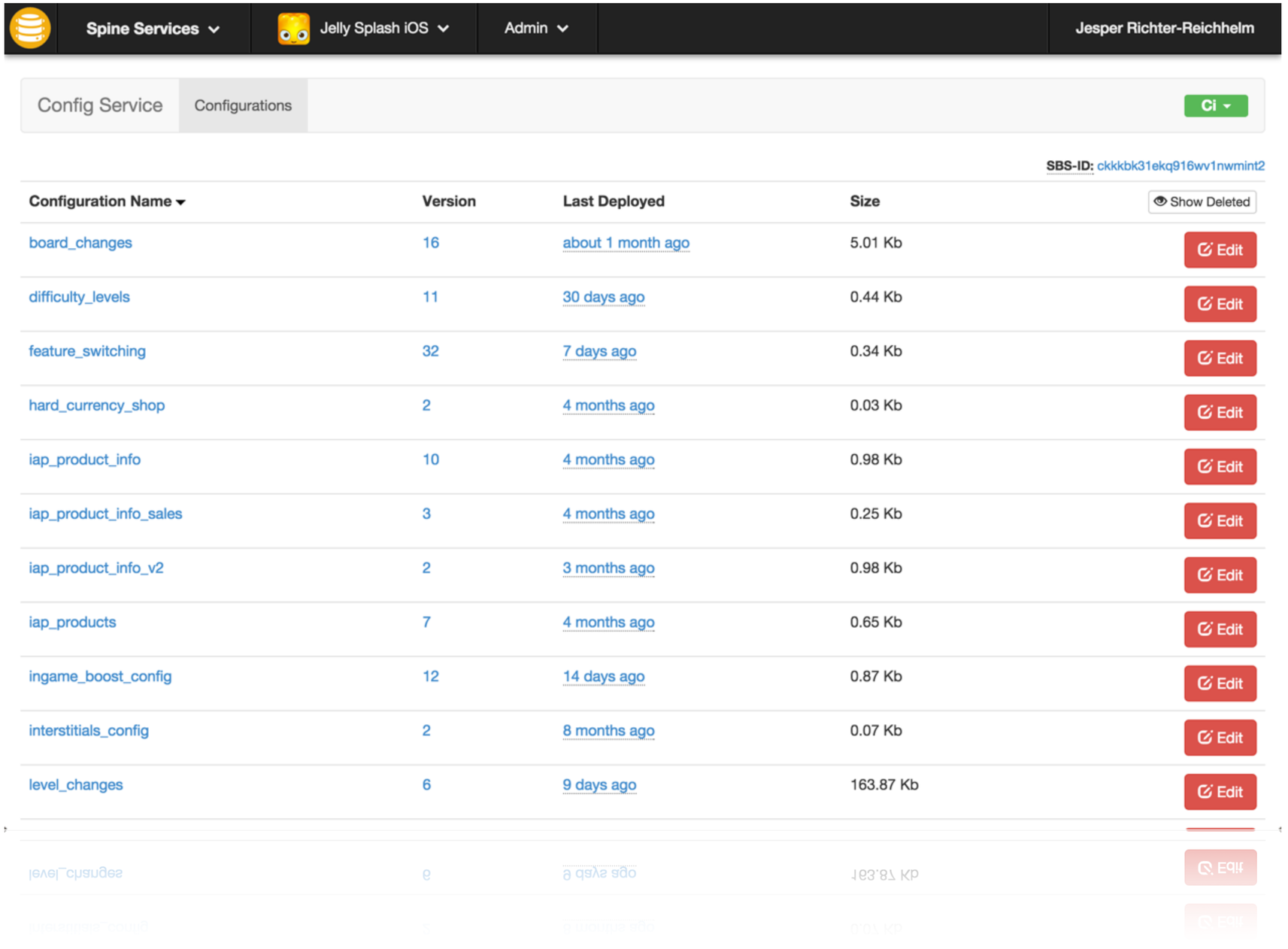
Config Service

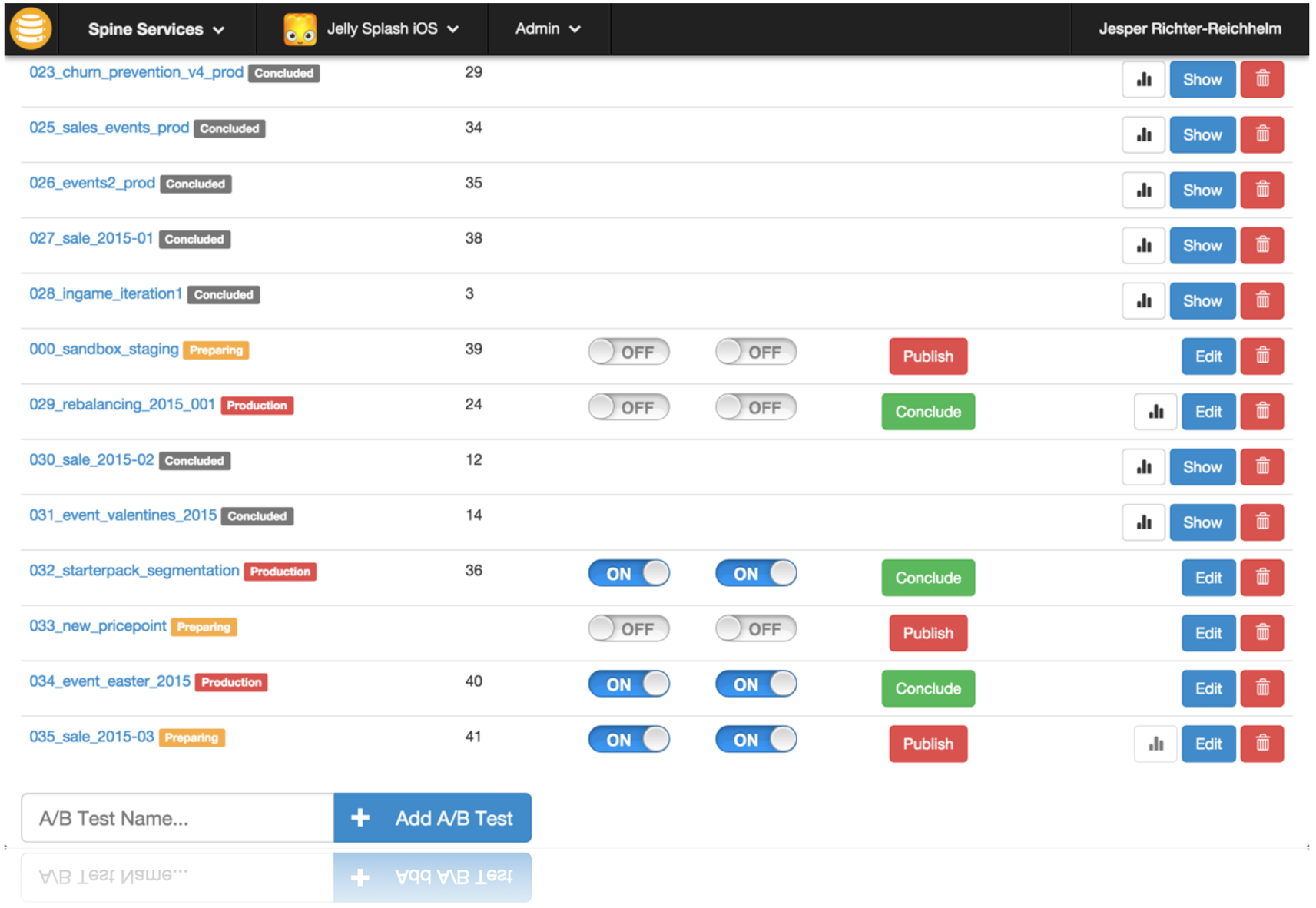
Variable config

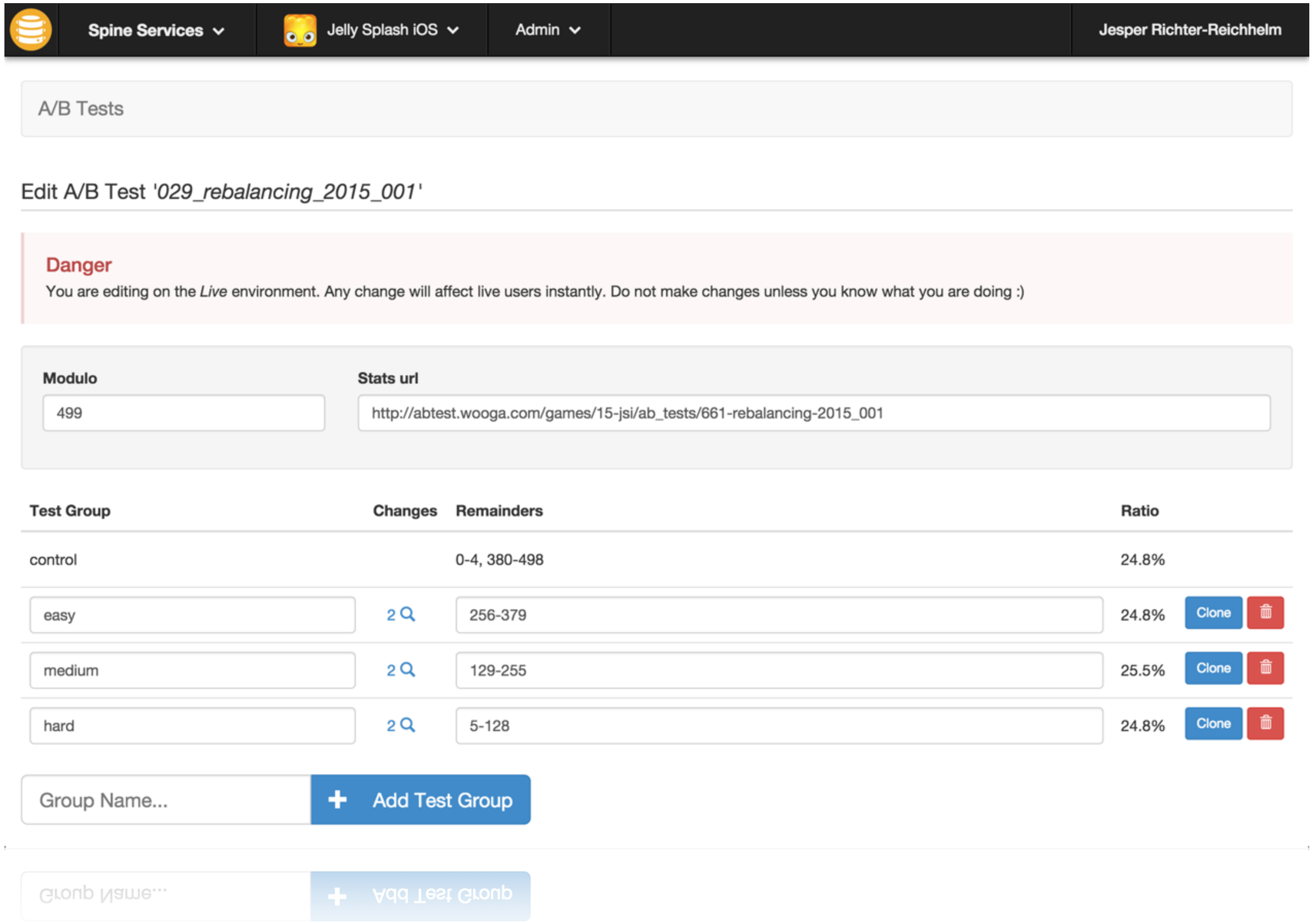
Offline mode

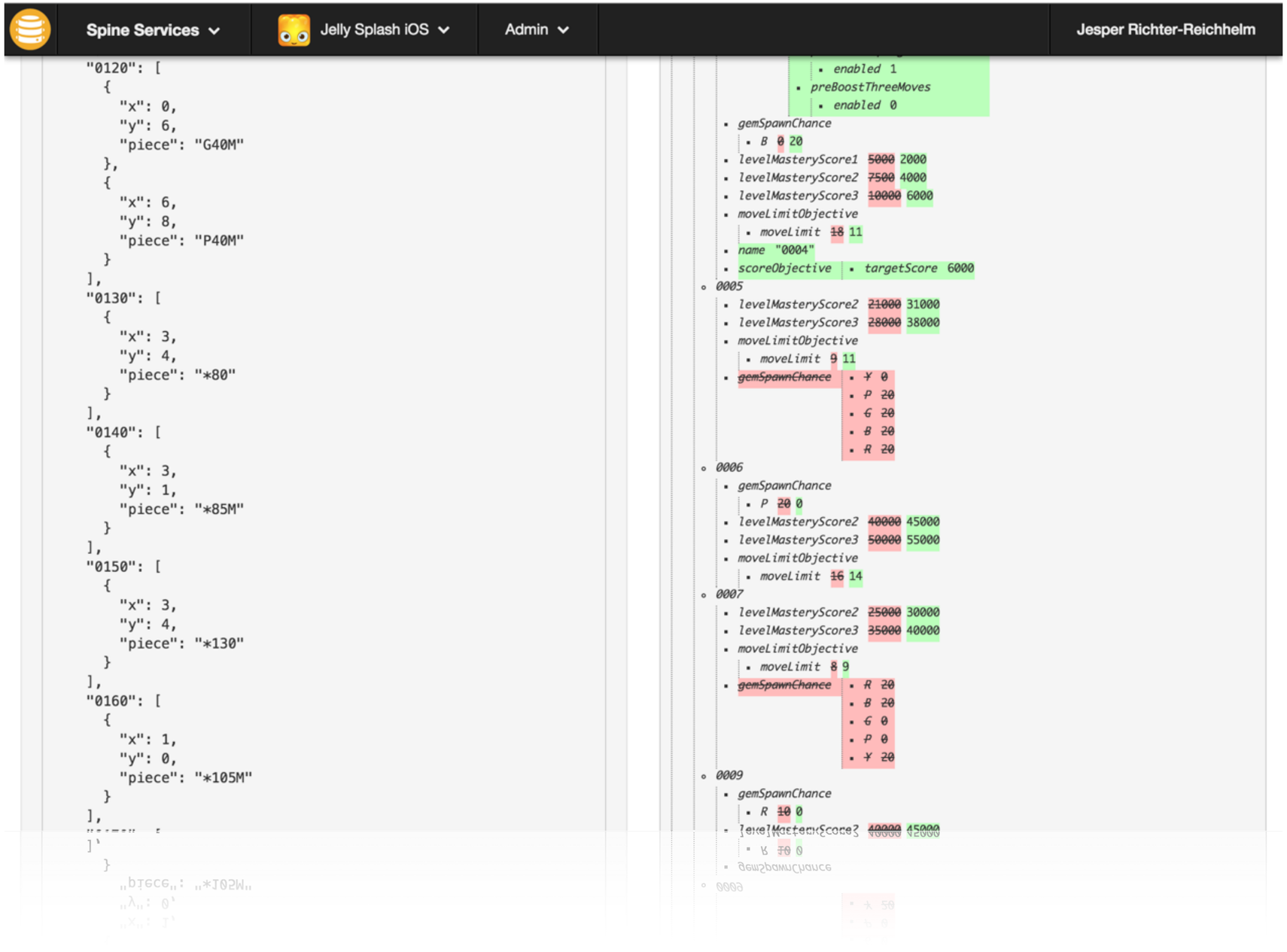
Environments

AB testing


Spine Services
Jelly Splash iOS
Admin
Jesper Richter-Reichhelm
Config Service
Configurations
Ci
SBS-ID: ckkkbk31ekq916wv1nwmint2
Configuration Name
Version
Last Deployed
Size
Show Deleted
board_changes 16 about 1 month ago 5.01 Kb Edit
difficulty_levels 11 30 days ago 0.44 Kb Edit
feature_switching 32 7 days ago 0.34 Kb Edit
hard_currency_shop 2 4 months ago 0.03 Kb Edit
iap_product_info 10 4 months ago 0.98 Kb Edit
iap_product_info_sales 3 4 months ago 0.25 Kb Edit
iap_product_info_v2 2 3 months ago 0.98 Kb Edit
iap_products 7 4 months ago 0.65 Kb Edit
ingame_boost_config 12 14 days ago 0.87 Kb Edit
interstitials_config 2 8 months ago 0.07 Kb Edit
level_changes 6 9 days ago 163.87 Kb Edit


Spine Services
Jelly Splash iOS
Admin
Jesper Richter-Reichhelm
023_churn_prevention_v4_prod Concluded 29 Show
025_sales_events_prod Concluded 34 Show
026_events2_prod Concluded 35 Show
027_sale_2015-01 Concluded 38 Show
028_ingame_iteration1 Concluded 3 Show
000_sandbox_staging Preparing 39 OFF OFF Publish Edit
029_rebalancing_2015_001 Production 24 OFF OFF Conclude Edit
030_sale_2015-02 Concluded 12 Show
031_event_valentines_2015 Concluded 14 Show
032_starterpack_segmentation Production 36 ON ON Conclude Edit
033_new_pricepoint Preparing OFF OFF Publish Edit
034_event_easter_2015 Production 40 ON ON Conclude Edit
035_sale_2015-03 Preparing 41 ON ON Publish Edit
A/B Test Name...
Add A/B Test


Spine Services
Jelly Splash iOS
Admin
Jesper Richter-Reichhelm
A/B Tests
Edit A/B Test '029_rebalancing_2015_001'
Danger
You are editing on the Live environment. Any change will affect live users instantly. Do not make changes unless you know what you are doing :)
Modulo
499
Stats url
http://abtest.wooga.com/games/15-jsi/ab_tests/661-rebalancing-2015_001
Test Group
Changes
Remainders
Ratio
control
0-4, 380-498
24.8%
easy
2
256-379
24.8%
Clone
medium
2
129-255
25.5%
Clone
hard
2
5-128
24.8%
Clone
Group Name...
Add Test Group


Spine Services
Jelly Splash iOS
Admin
Jesper Richter-Reichhelm
"0120": [
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"x": 0,
"y": 6,
"piece": "G40M"
},
{
"x": 6,
"y": 8,
"piece": "P40M"
}
],
"0130": [
{
"x": 3,
"y": 4,
"piece": "*80"
}
],
"0140": [
{
"x": 3,
"y": 1,
"piece": "*85M"
}
],
"0150": [
{
"x": 3,
"y": 4,
"piece": "*130"
}
],
"0160": [
{
"x": 1,
"y": 0,
"piece": "*105M"
}
],
enabled 1
preBoostThreeMoves
enabled 0
gemSpawnChance
B 0 20
levelMasteryScore1 5000 2000
levelMasteryScore2 7500 4000
levelMasteryScore3 10000 6000
moveLimitObjective
moveLimit 18 11
name "0004"
scoreObjective targetScore 6000
0005
levelMasteryScore2 21000 31000
levelMasteryScore3 28000 38000
moveLimitObjective
moveLimit 9 11
gemSpawnChance
Y 0
P 20
G 20
B 20
R 20
0006
gemSpawnChance
P 20 0
levelMasteryScore2 40000 45000
levelMasteryScore3 50000 55000
moveLimitObjective
moveLimit 16 14
0007
levelMasteryScore2 25000 30000
levelMasteryScore3 35000 40000
moveLimitObjective
moveLimit 8 9
gemSpawnChance
R 20
B 20
G 0
P 0
Y 20
0009
gemSpawnChance
R 10 0

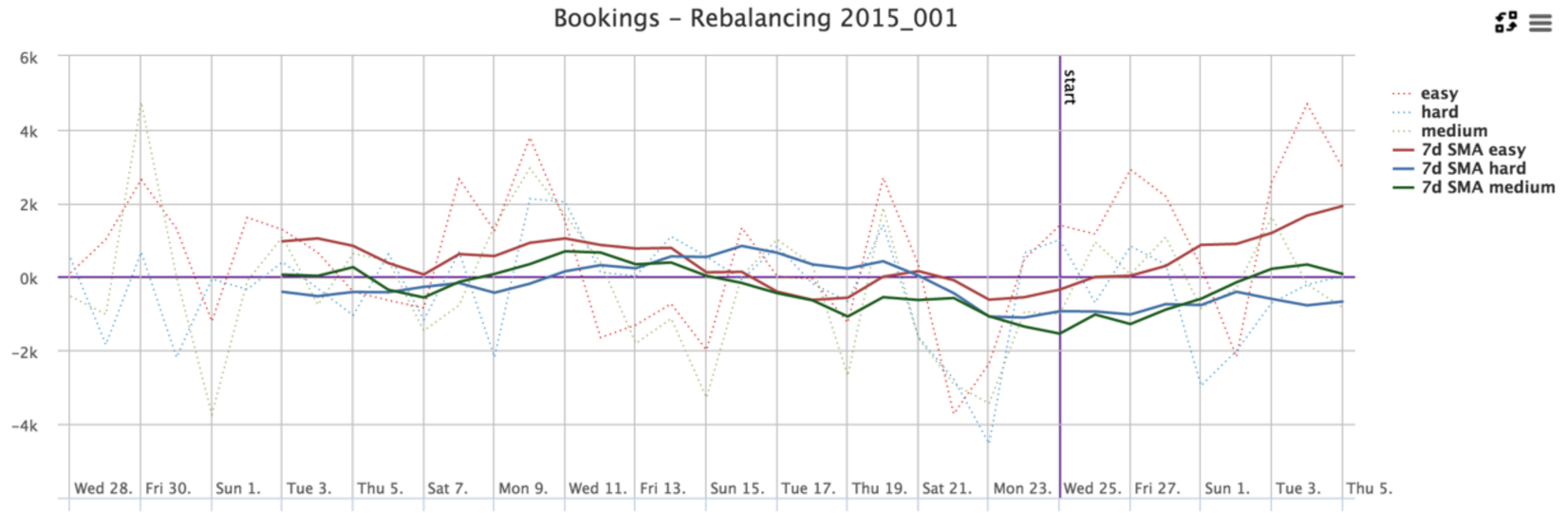
Home | Jelly Splash iOS | Rebalancing 2015_001 | Reports | Search | Search

Bookings

Total amount of bookings per testgroup

This report is normalized. All values are scaled up to show how the numbers would look like if the test/control group would include 100% of our players.

Chart Showing Difference to Control Group



Tip: Zoom in by clicking and dragging mouse from start to end in the graph. Show or hide groups by clicking on them in the legend.

Differences

easy vs control	
Week 1	Week 2
+4.1%	
+6.2%	

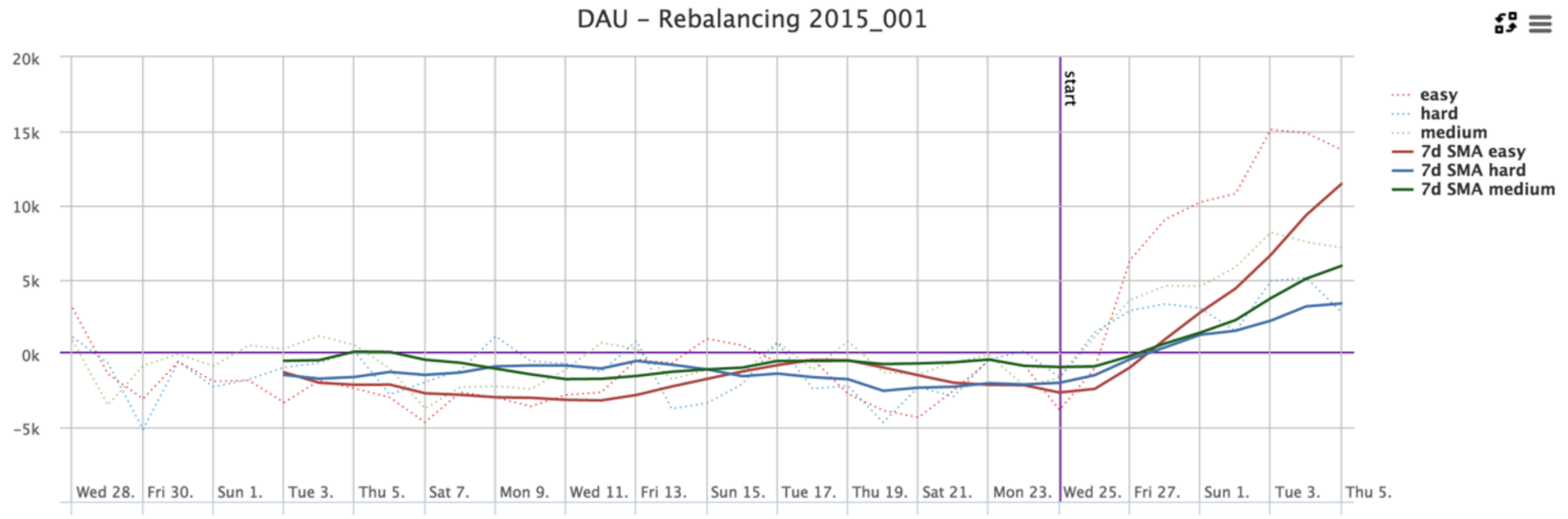
Home | Jelly Splash iOS | Rebalancing 2015_001 | Reports | Search | Search

DAU

Daily Active Users

This report is normalized. All values are scaled up to show how the numbers would look like if the test/control group would include 100% of our players.
The significance calculation only takes into account the last 14 days of data.

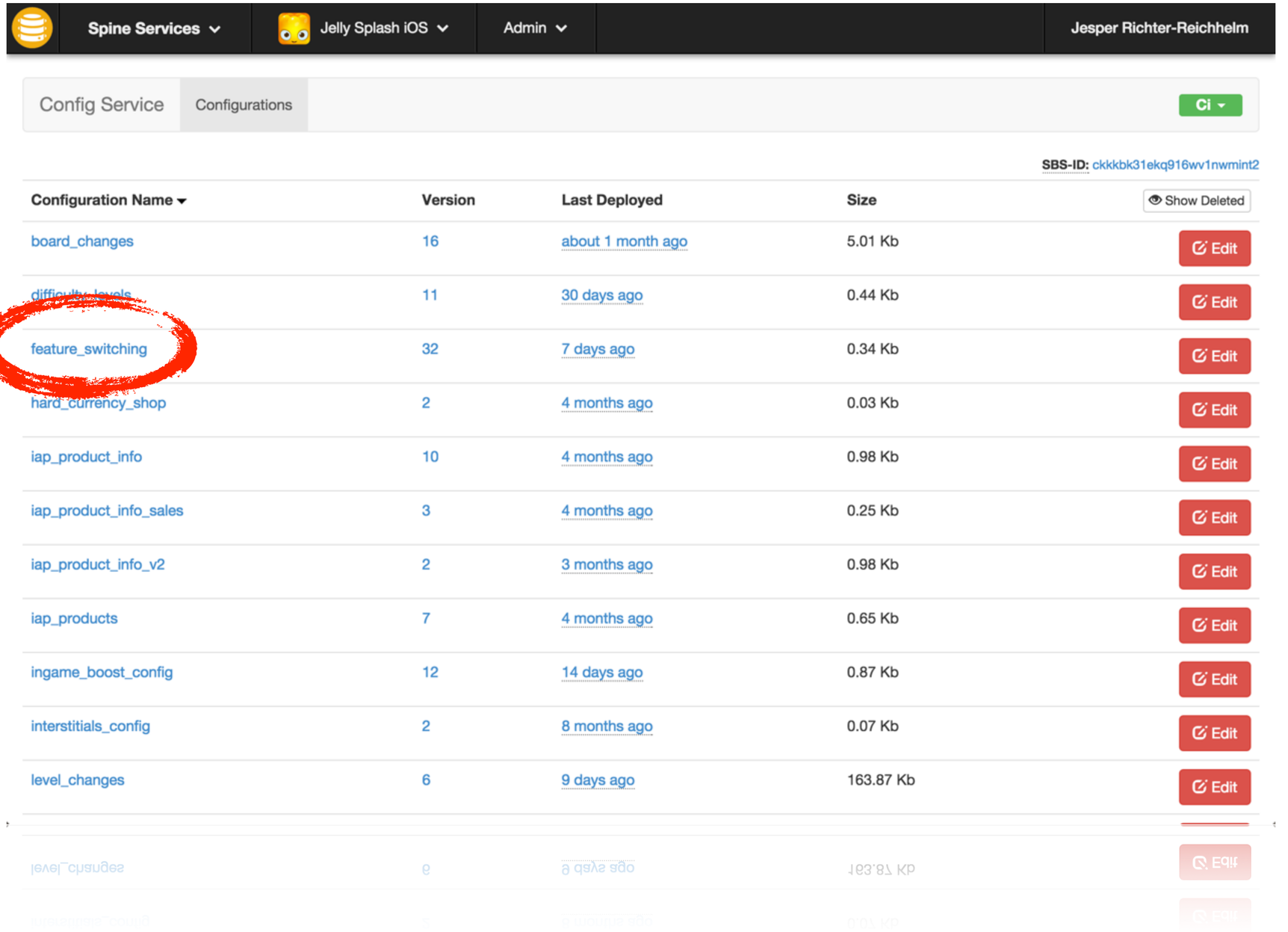
Chart Showing Difference to Control Group

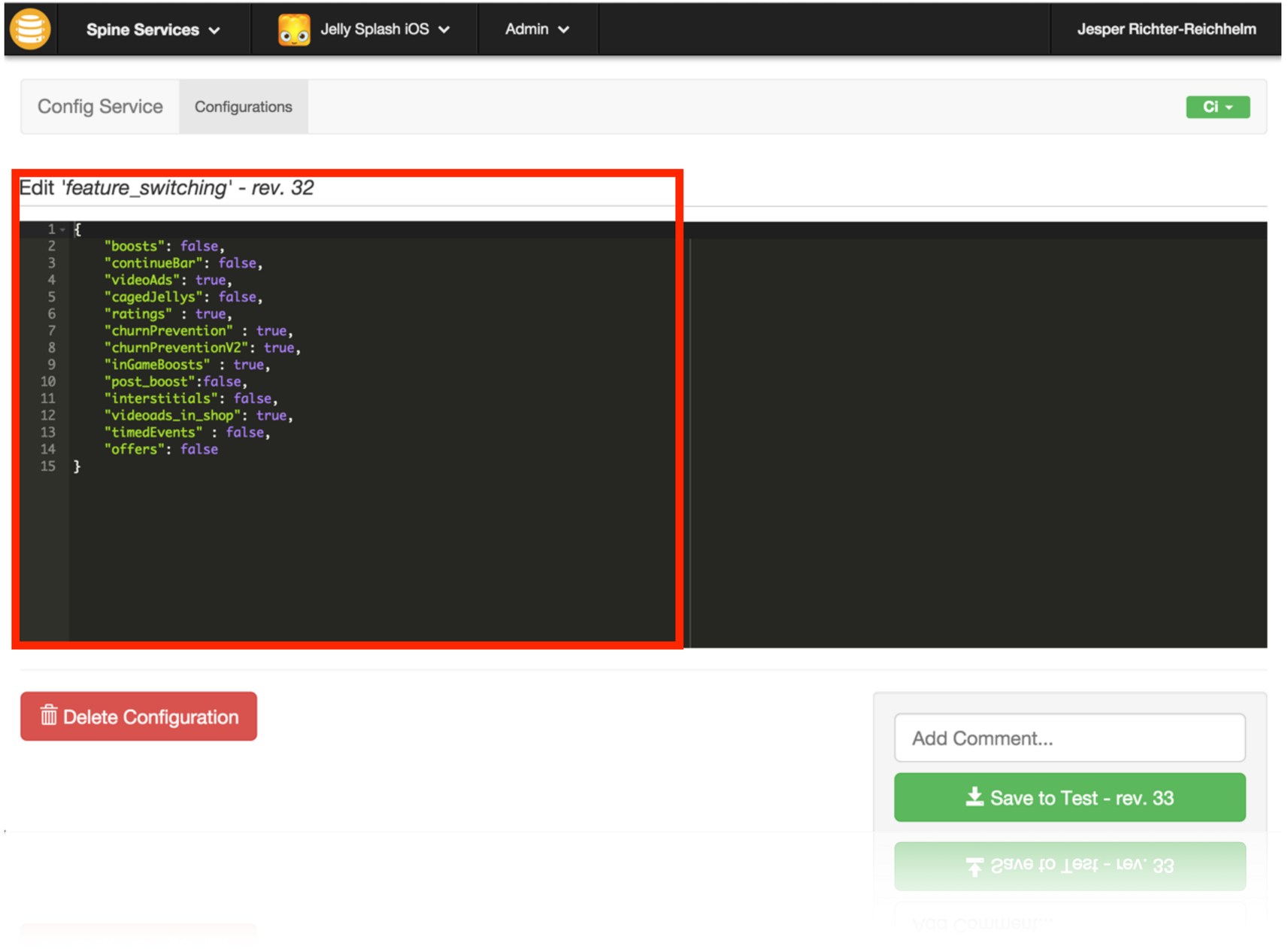


Tip: Zoom in by clicking and dragging mouse from start to end in the graph. Show or hide groups by clicking on them in the legend.

Differences

easy vs control	
Week 1	Week 2
+0.9%	⊙


Spine Services
Jelly Splash iOS
Admin
Jesper Richter-Reichhelm
Config Service
Configurations
Ci
SBS-ID: ckkkbk31ekq916wv1nwmint2
Configuration Name
Version
Last Deployed
Size
Show Deleted
board_changes 16 about 1 month ago 5.01 Kb Edit
difficulty_levels 11 30 days ago 0.44 Kb Edit
feature_switching 32 7 days ago 0.34 Kb Edit
hard_currency_shop 2 4 months ago 0.03 Kb Edit
iap_product_info 10 4 months ago 0.98 Kb Edit
iap_product_info_sales 3 4 months ago 0.25 Kb Edit
iap_product_info_v2 2 3 months ago 0.98 Kb Edit
iap_products 7 4 months ago 0.65 Kb Edit
ingame_boost_config 12 14 days ago 0.87 Kb Edit
interstitials_config 2 8 months ago 0.07 Kb Edit
level_changes 6 9 days ago 163.87 Kb Edit


Spine Services
Jelly Splash iOS
Admin
Jesper Richter-Reichhelm
Config Service
Configurations
CI
Edit 'feature_switching' - rev. 32
{
"boosts": false,
"continueBar": false,
"videoAds": true,
"cagedJellys": false,
"ratings" : true,
"churnPrevention" : true,
"churnPreventionV2": true,
"inGameBoosts" : true,
"post_boost":false,
"interstitials": false,
"videoads_in_shop": true,
"timedEvents" : false,
"offers": false
}
Delete Configuration
Add Comment...
Save to Test - rev. 33

Edit '*feature_switching*' - *rev. 32*

```
{
    "boosts": false,
    "continueBar": false,
    "videoAds": true,
    "cagedJellys": false,
    "ratings" : true,
    "churnPrevention" : true,
    "churnPreventionV2": true,
    "inGameBoosts" : true,
    "post_boost":false,
    "interstitials": false,
    "videoads_in_shop": true,
    "timedEvents" : false,
    "offers": false
}
```

What we have learned

MTTR > MTBF

You will always have bugs, no matter what you do

Make sure they don’t kill you

Be always able to react

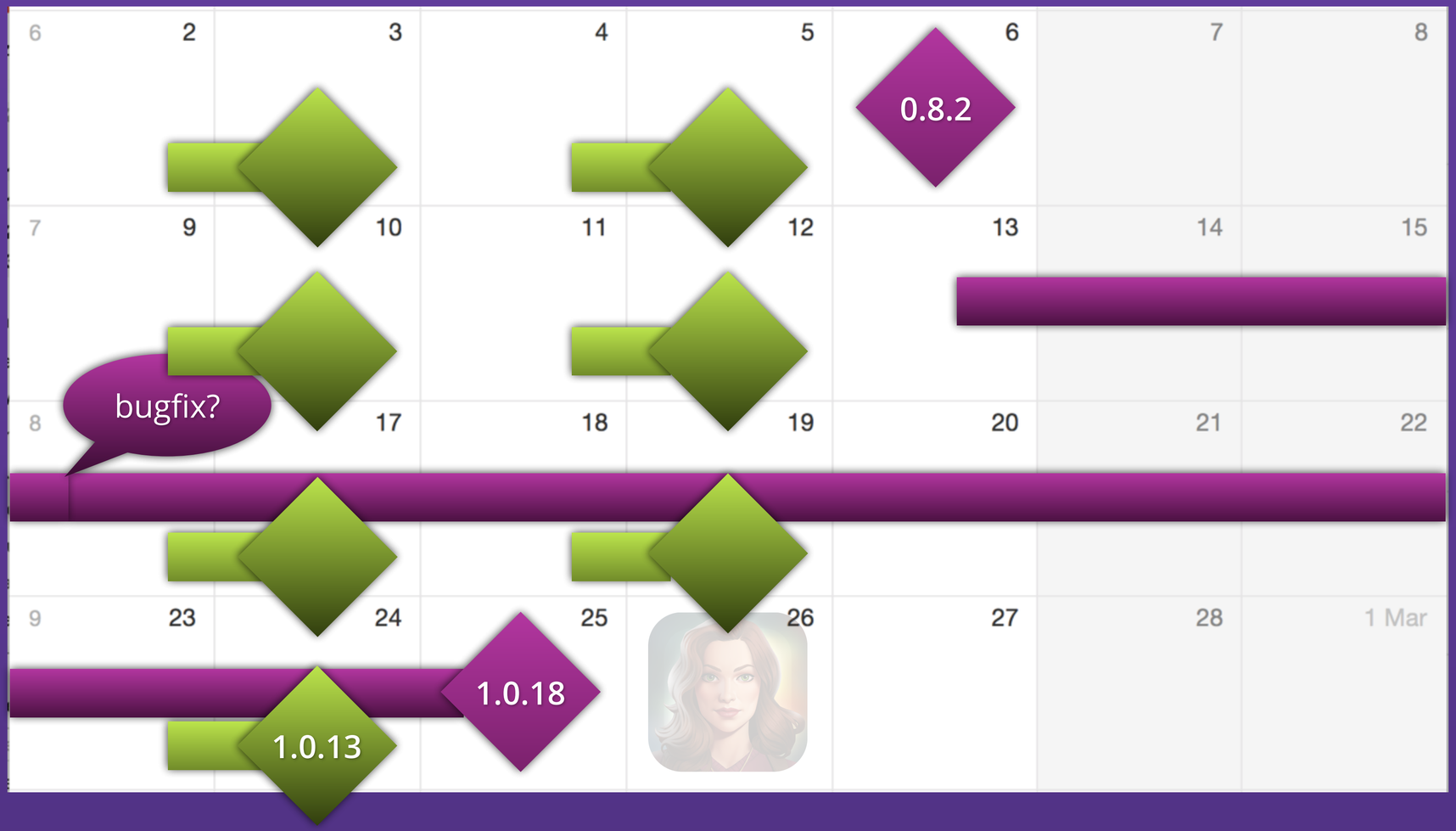
Build tools if necessary

All those Devices...

How I learned to love Android...

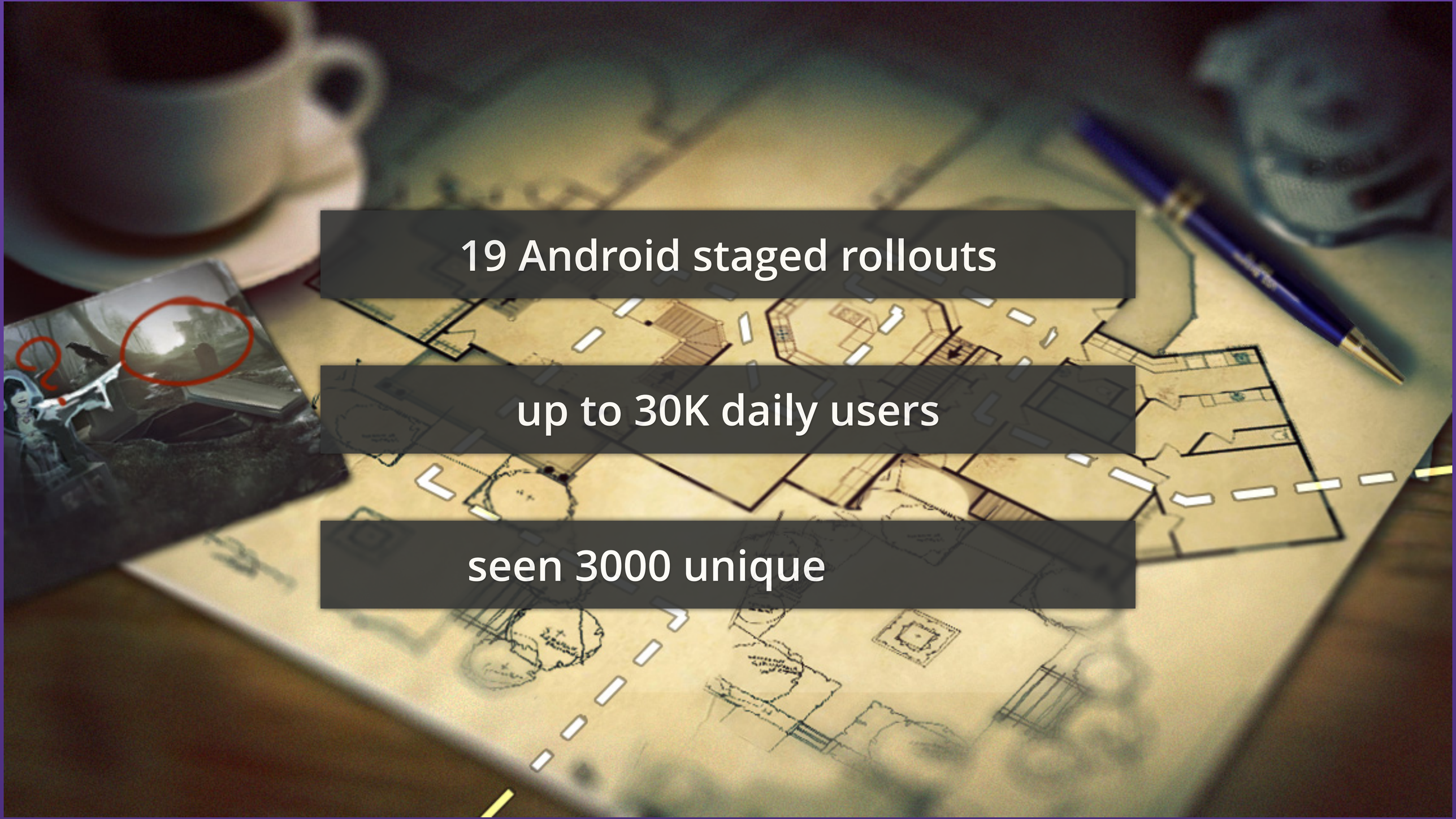
Emphasis on Android came late
Only 4 months of ‘real’ effort
8 weeks of soft launch

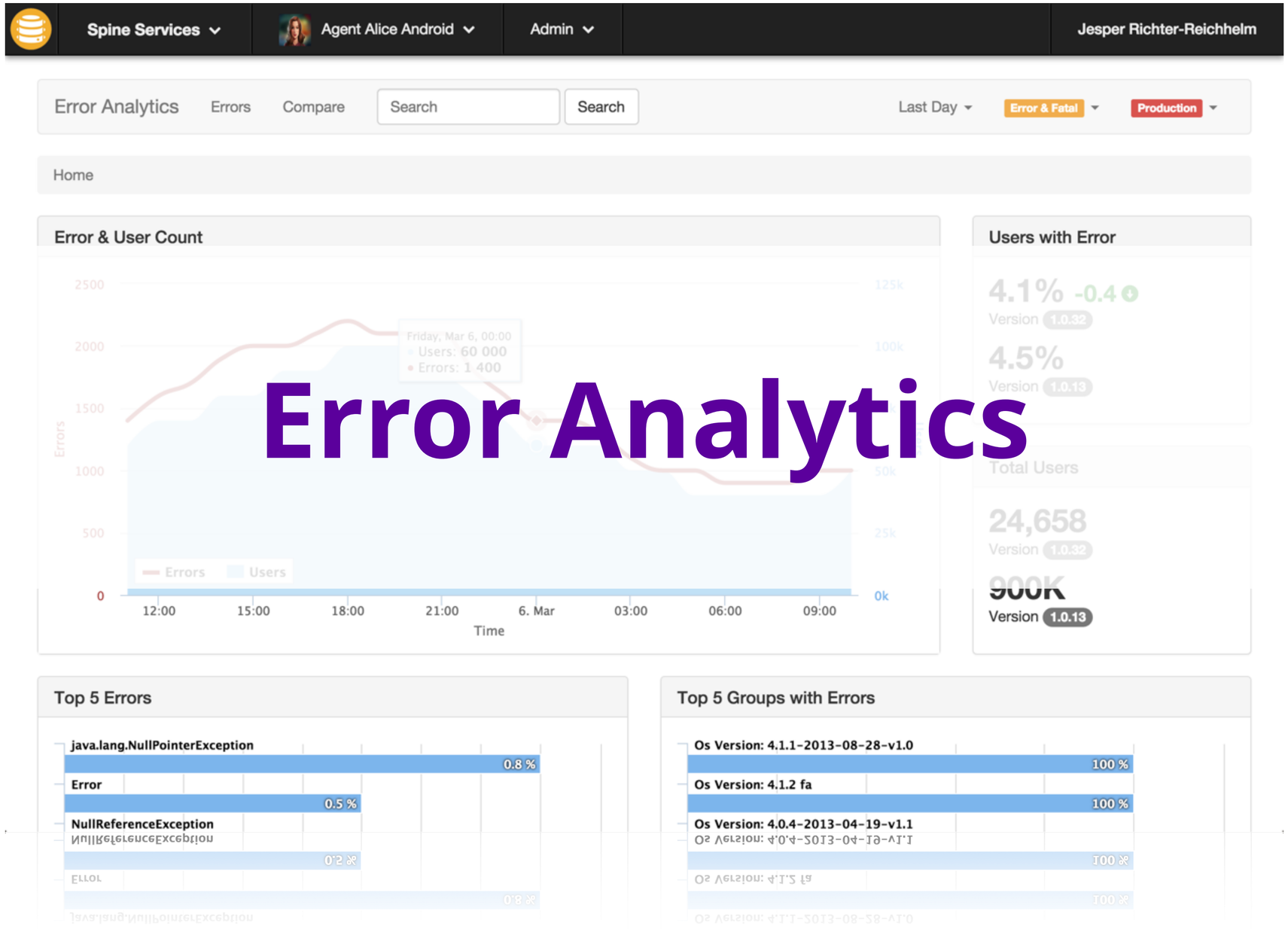
February 2015



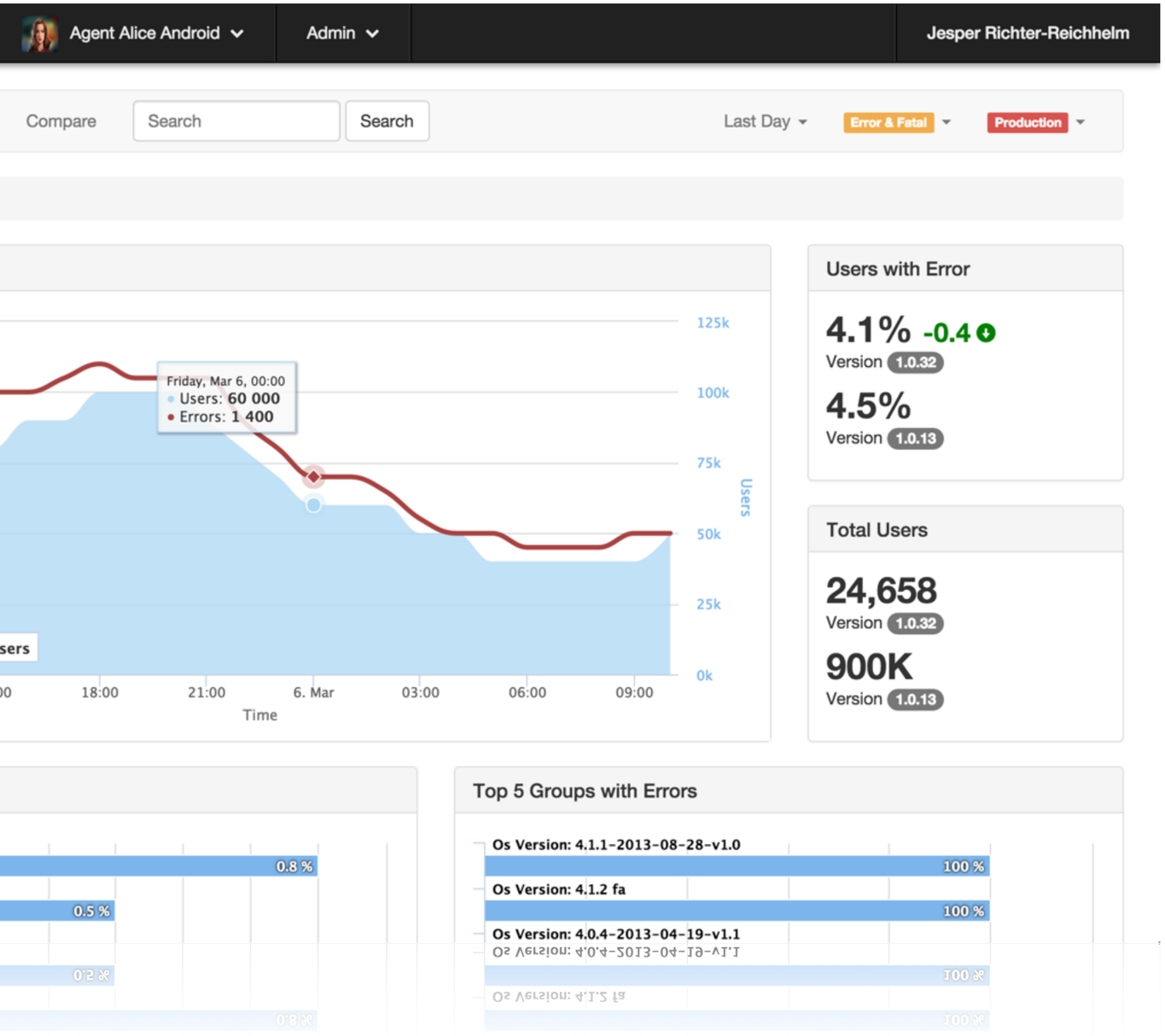
February 2015

6	2	3	4	5	6	7	8
					0.8.2		
7	9	10	11	12	13	14	15
8	16	17	18	19	20	21	22
9	23	24	25	26	27	28	1 Mar
		1.0.13	1.0.18				


19 Android staged rollouts
up to 30K daily users
seen 3000 unique



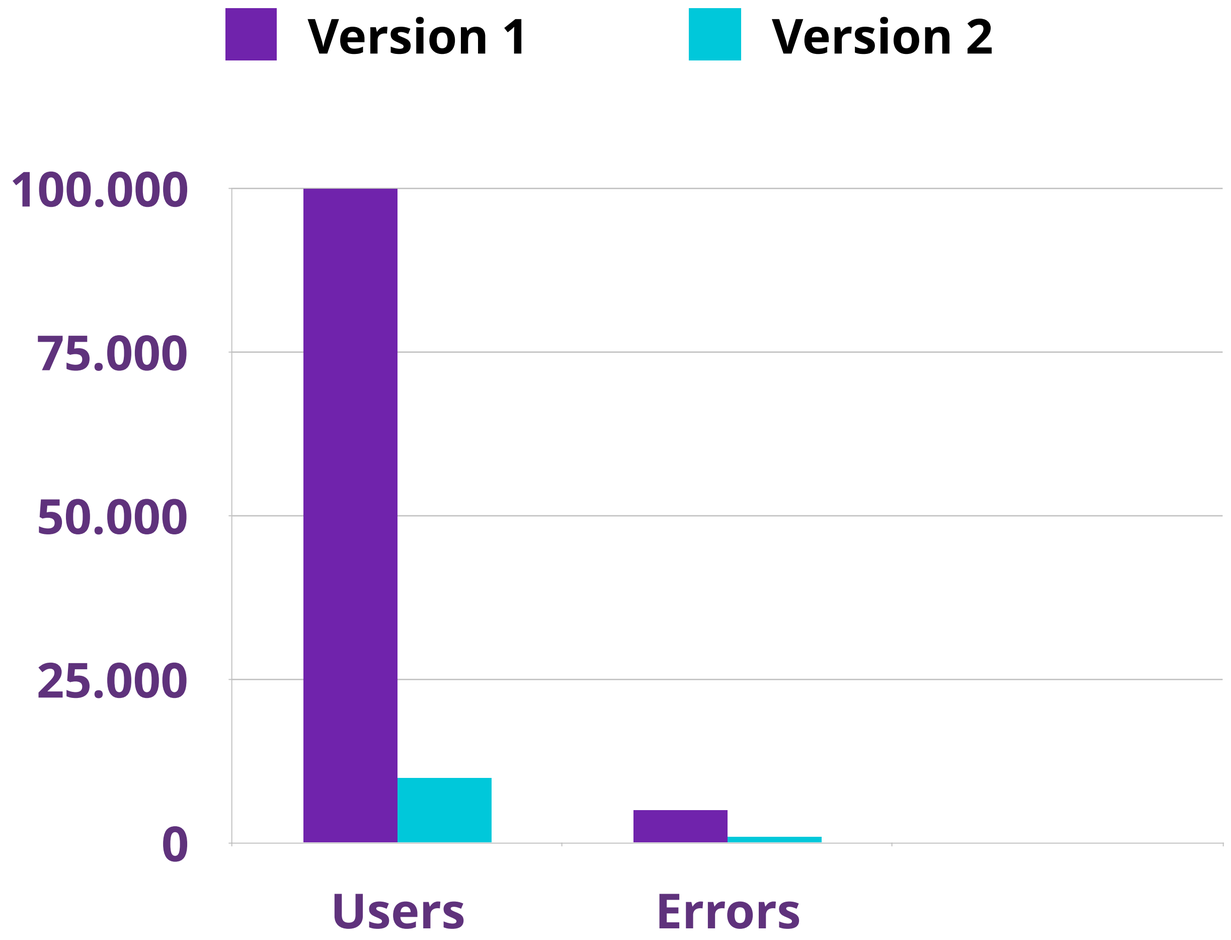
Error Analytics

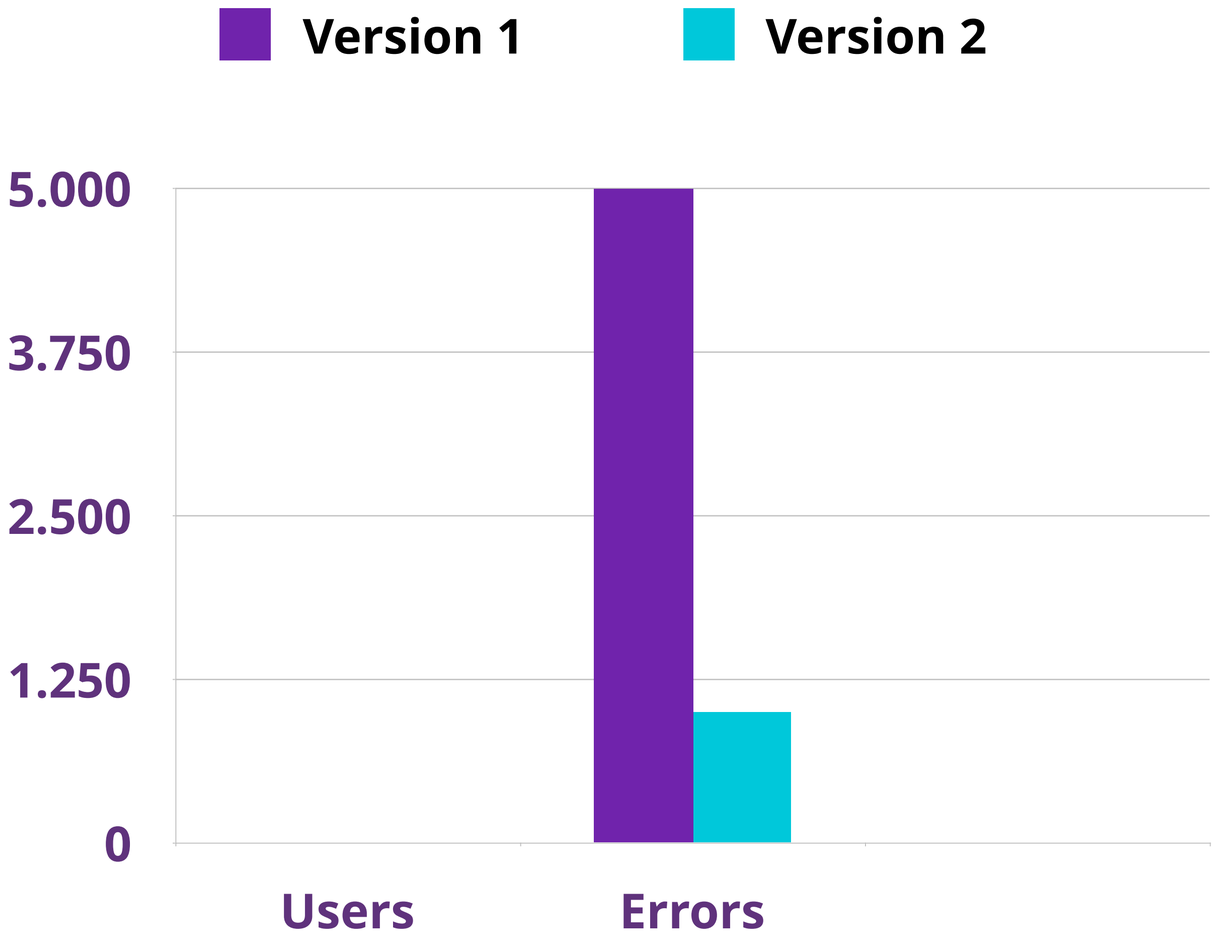


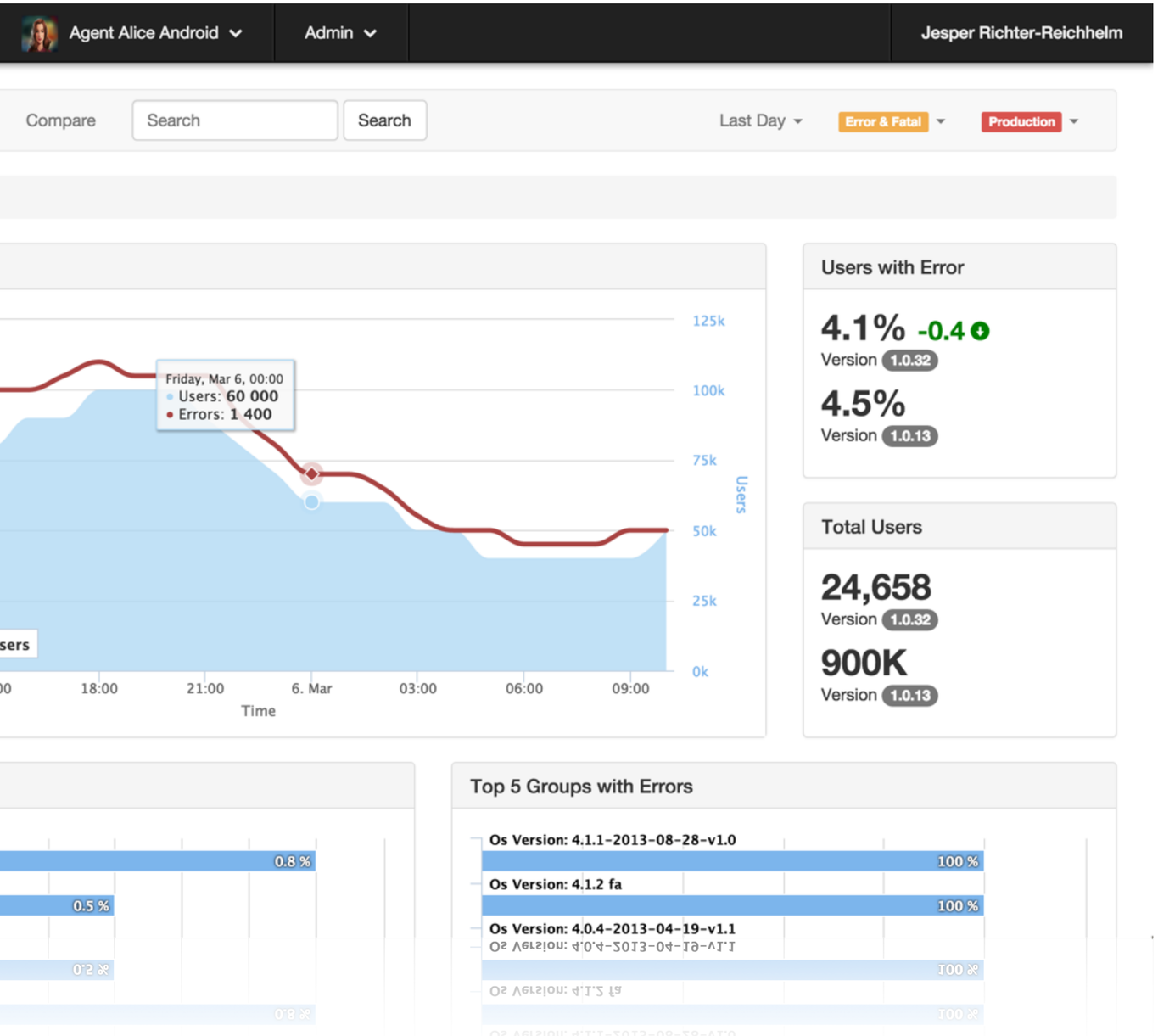
Real time

Error reports

Segmentation


Version 1
Version 2
100.000
75.000
50.000
25.000
0
Users
Errors


Version 1
Version 2
5.000
3.750
2.500
1.250
0
Users
Errors

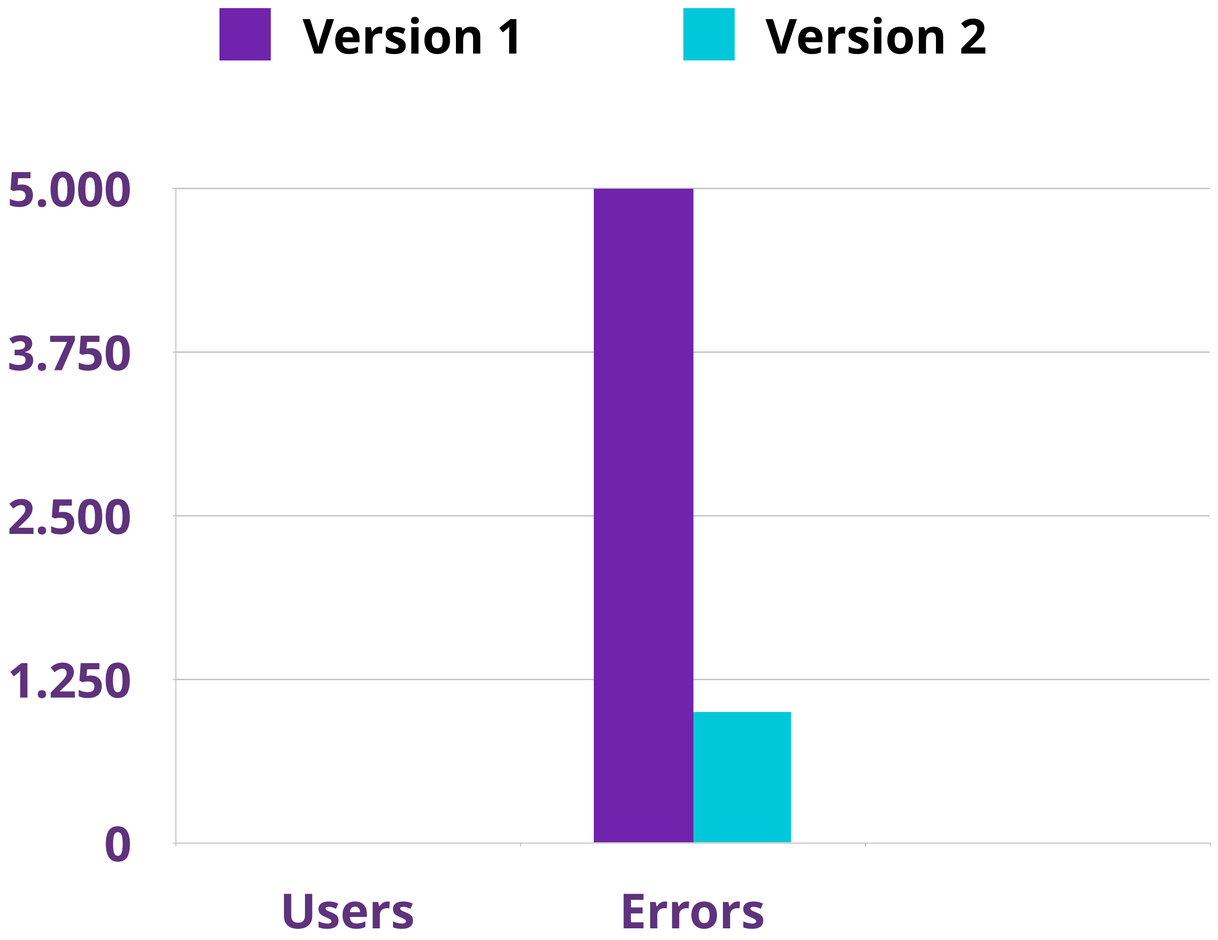


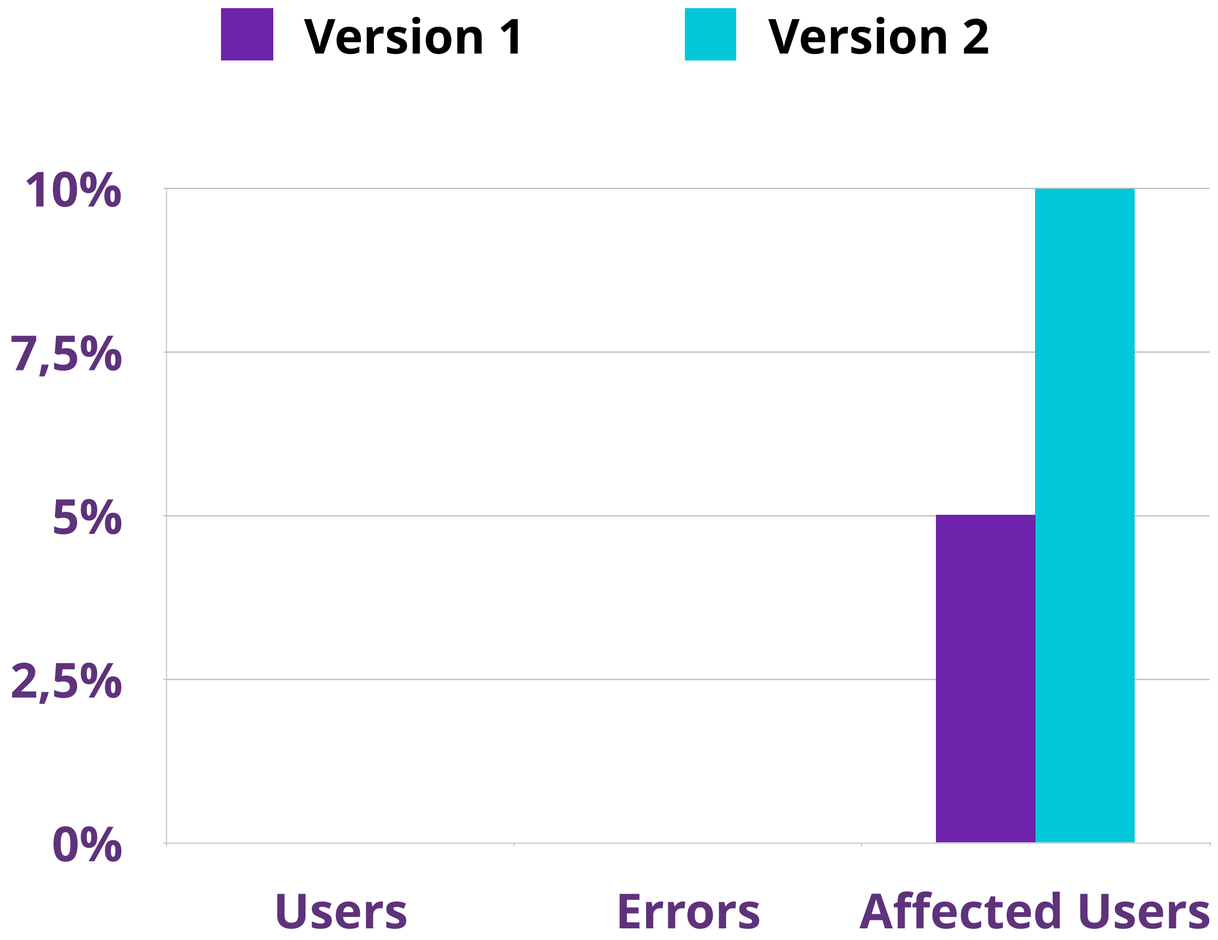
Real time

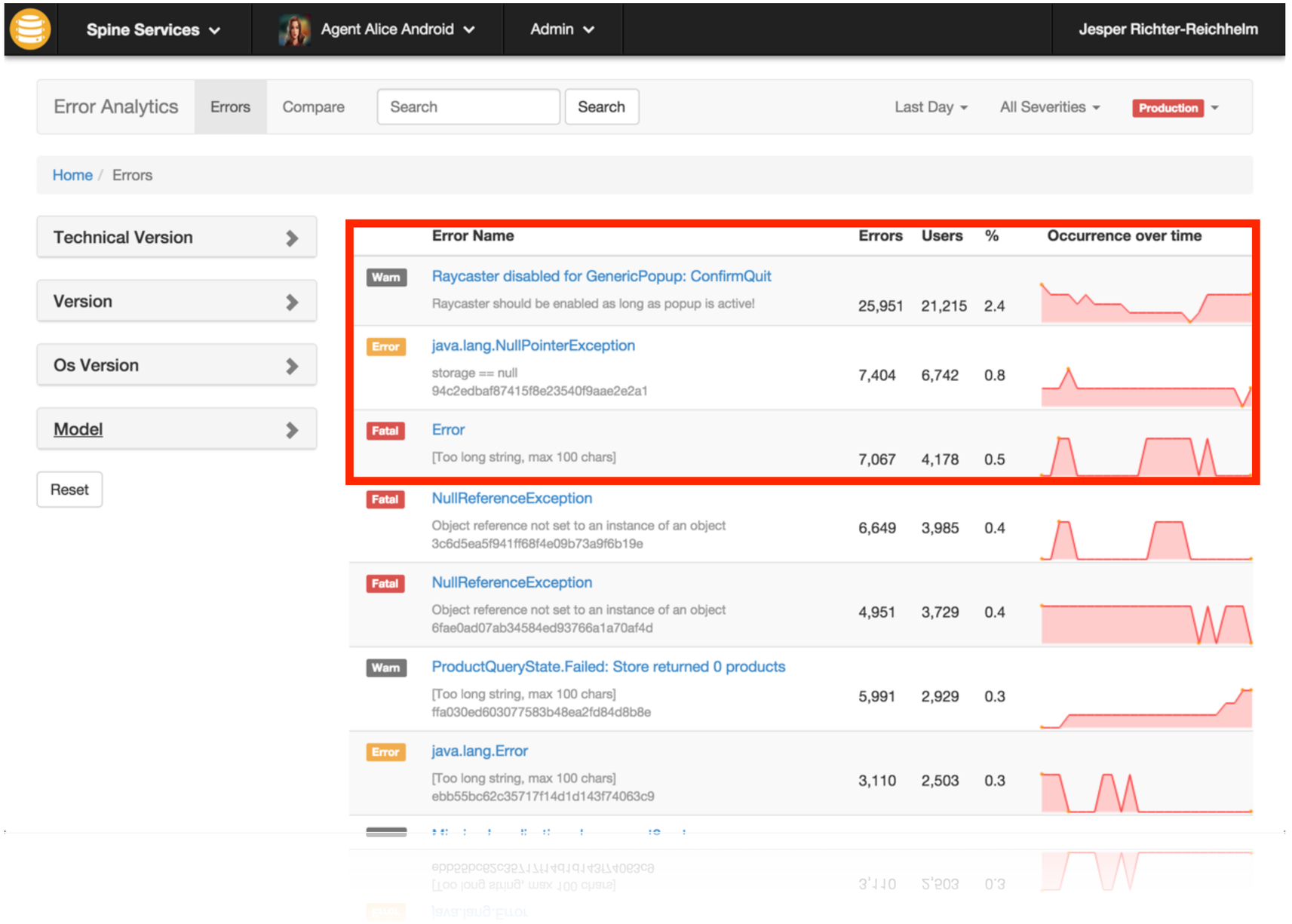
Error reports

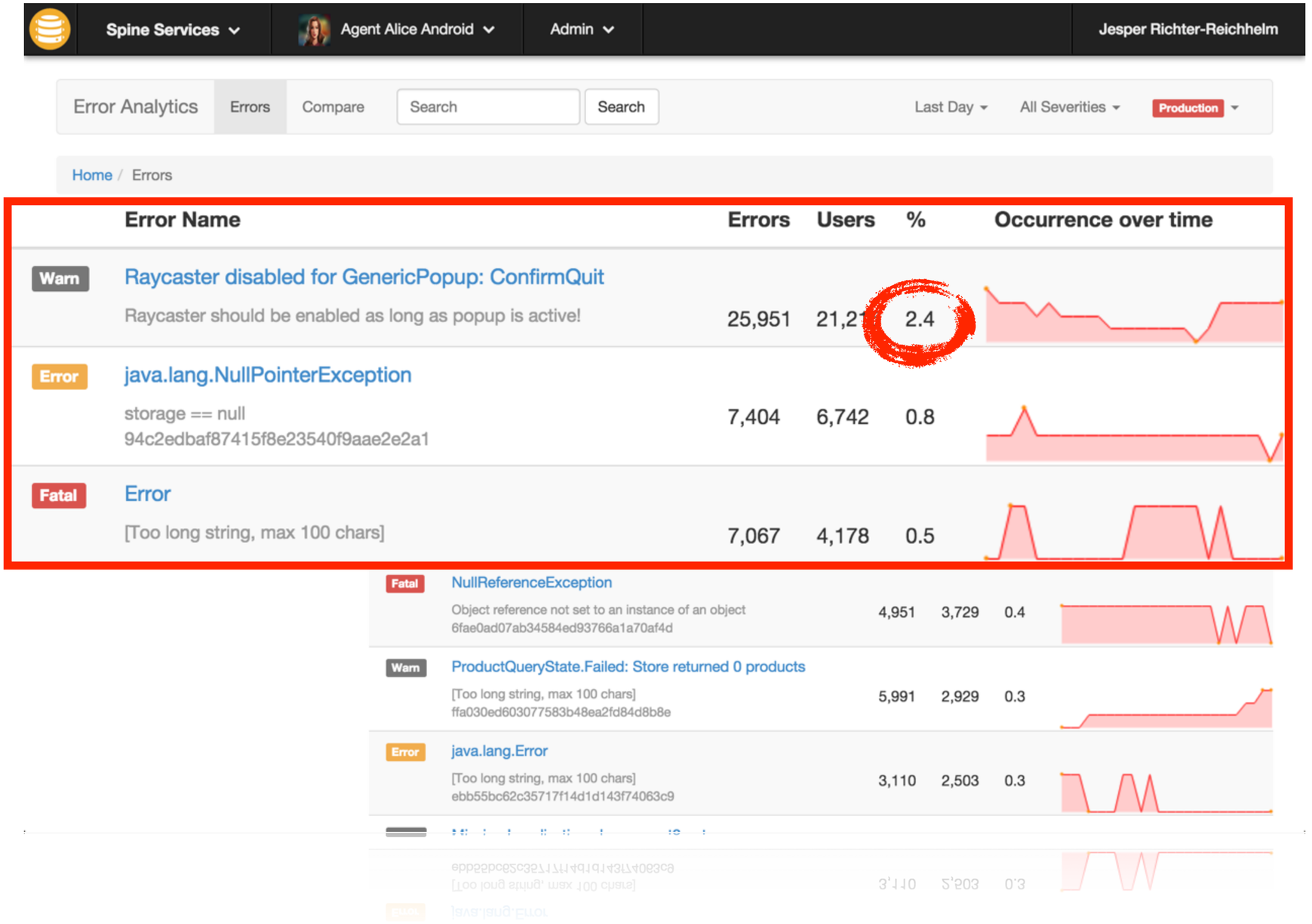
Segmentation

Normalisation


Version 1
Version 2
5.000
3.750
2.500
1.250
0
Users
Errors


Version 1
Version 2
10%
7,5%
5%
2,5%
0%
Users
Errors
Affected Users


Spine Services
Agent Alice Android
Admin
Jesper Richter-Reichhelm
Error Analytics
Errors
Compare
Search
Search
Last Day
All Severities
Production
Home / Errors
Technical Version
Version
Os Version
Model
Reset
Error Name
Errors
Users
%
Occurrence over time
Warn
Raycaster disabled for GenericPopup: ConfirmQuit
Raycaster should be enabled as long as popup is active!
25,951
21,215
2.4
Error
java.lang.NullPointerException
storage == null
94c2edbaf87415f8e23540f9aae2e2a1
7,404
6,742
0.8
Fatal
Error
[Too long string, max 100 chars]
7,067
4,178
0.5
Fatal
NullReferenceException
Object reference not set to an instance of an object
3c6d5ea5f941ff68f4e09b73a9f6b19e
6,649
3,985
0.4
Fatal
NullReferenceException
Object reference not set to an instance of an object
6fae0ad07ab34584ed93766a1a70af4d
4,951
3,729
0.4
Warn
ProductQueryState.Failed: Store returned 0 products
[Too long string, max 100 chars]
ffa030ed603077583b48ea2fd84d8b8e
5,991
2,929
0.3
Error
java.lang.Error
[Too long string, max 100 chars]
ebb55bc62c35717f14d1d143f74063c9
3,110
2,503
0.3


Spine Services
Agent Alice Android
Admin
Jesper Richter-Reichhelm
Error Analytics
Errors
Compare
Search
Search
Last Day
All Severities
Production
Home / Errors
Error Name
Errors
Users
%
Occurrence over time
Warn
Raycaster disabled for GenericPopup: ConfirmQuit
Raycaster should be enabled as long as popup is active!
25,951
21,21
2.4
Error
java.lang.NullPointerException
storage == null
94c2edbaf87415f8e23540f9aae2e2a1
7,404
6,742
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Error
java.lang.Error
[Too long string, max 100 chars]
ebb55bc62c35717f14d1d143f74063c9
3,110
2,503
0.3

What we have learned

Android is a tough platform

- Low end devices, lot’s of devices
- You need the right tooling

But operation is much easier

- No launch day risks
- Staged rollouts
- Quick iterations possible

Summary

What we have learned

Two platforms

True cross platform development is the best

Mobile operation

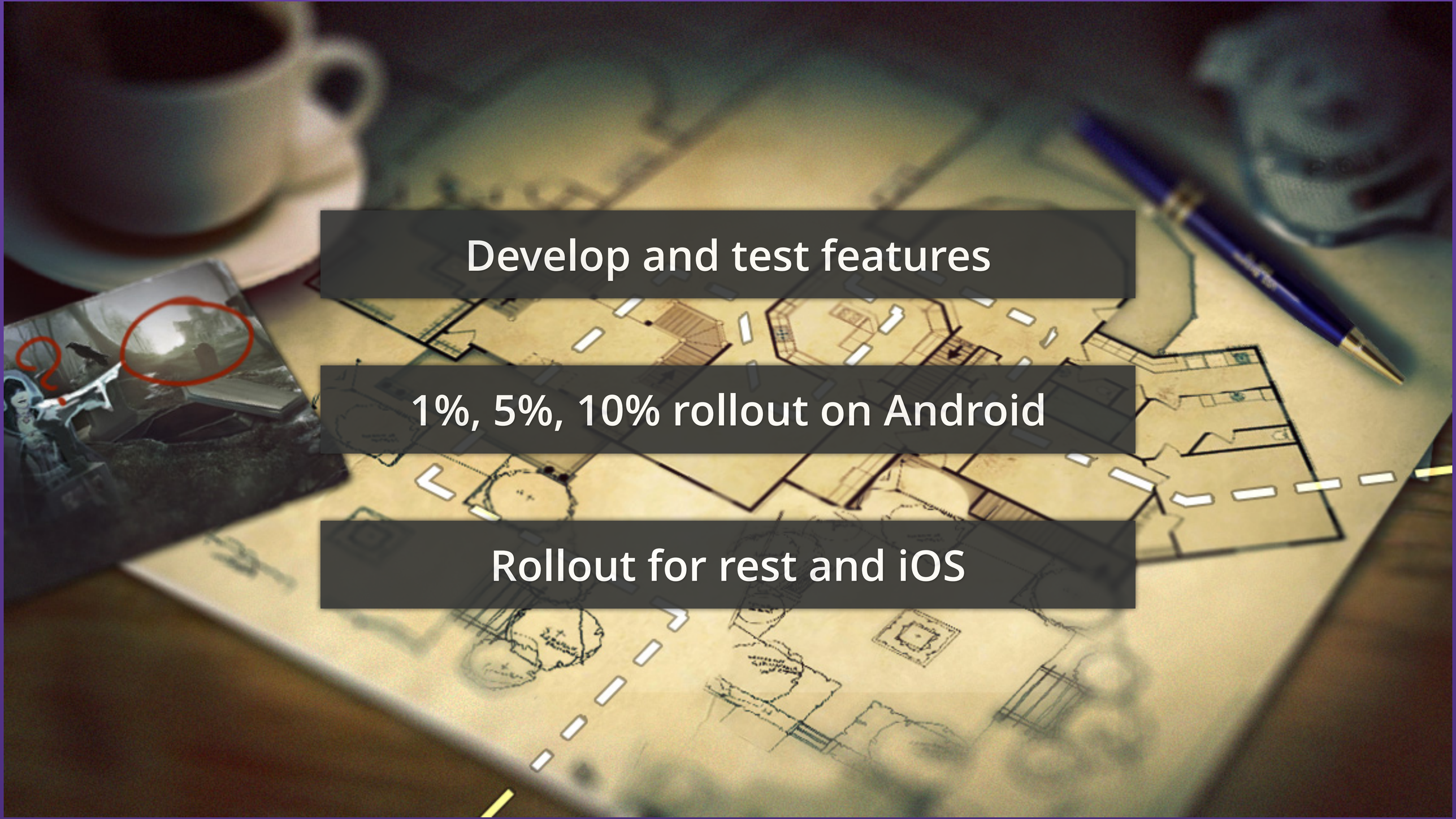
MTTR > MTBF

All those devices

Android is hard but allows quick iteration

I love Apple

but ...


Develop and test features
1%, 5%, 10% rollout on Android
Rollout for rest and iOS

I love Apple

but I’m starting to love Android even more

Thank you

Wooga

Questions?

Jesper Richter-Reichhelm (@jrirei)

Wooga

Questions?

Jesper Richter-Reichhelm (@jrirei)

goto; conference

Please

Remember to rate session

Thank you!

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