



# nRspec

Thumb, Byte

Growth Session #21 - January 24-25 2019

Red Planet UI Tests are so painful:

- UITests suite takes 4 Hours for each build (Branch and PR)
- After 2 builds succeed, 2 hours more for the Develop Build
- Minimum 6 Hours for each build (exclude flaky tests)
- Use RSpec for UITests

## Intro



# What If?



# What If?

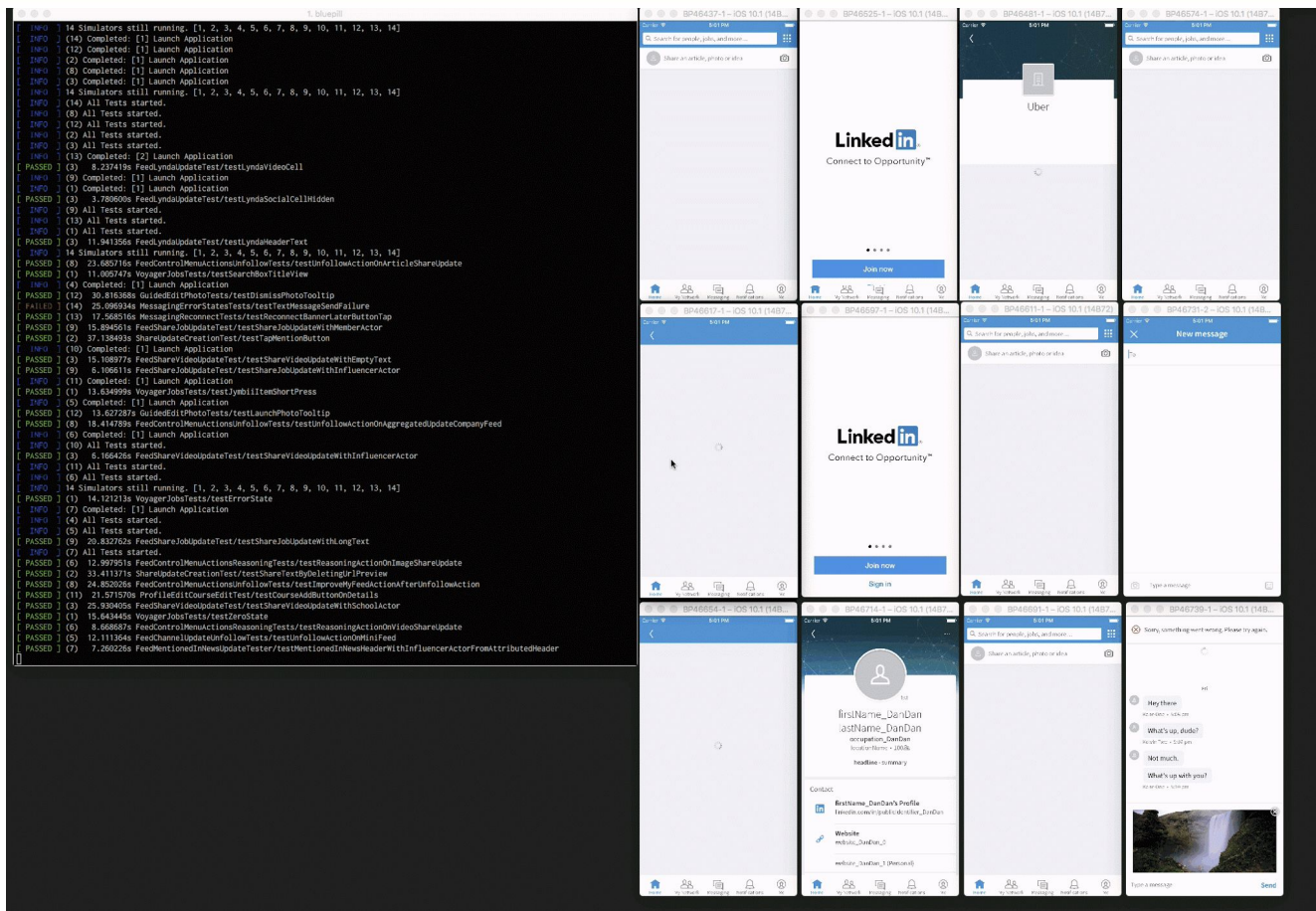
- We distribute test cases and run them in parallel instead of serial.
- UITests duration 120 minutes
  - 3 executors
    - The best result of parallel distribution UITests is 40 minutes
  - Combine result together

How to distribute tests into groups of the same duration ?

- Randomly?
- Algorithmically?

- Knapsack Pro (previous session by Thumb)
  - Splits tests across CI nodes
  - Makes sure that tests will run with comparable duration on each node
- LinkedIn BluePill
  - iOS UITests Distributor Framework
  - iOS UITests Parallel UITests Framework

# Intro





# Goals

- Measure spec duration
- Store spec duration for optimization
- Distribute spec files into different groups
  - Duration base
  - Distribute into `n` groups
  - Distributed groups have total duration close to each other as much as possible



Why nRspec?

## Why nRspec ?

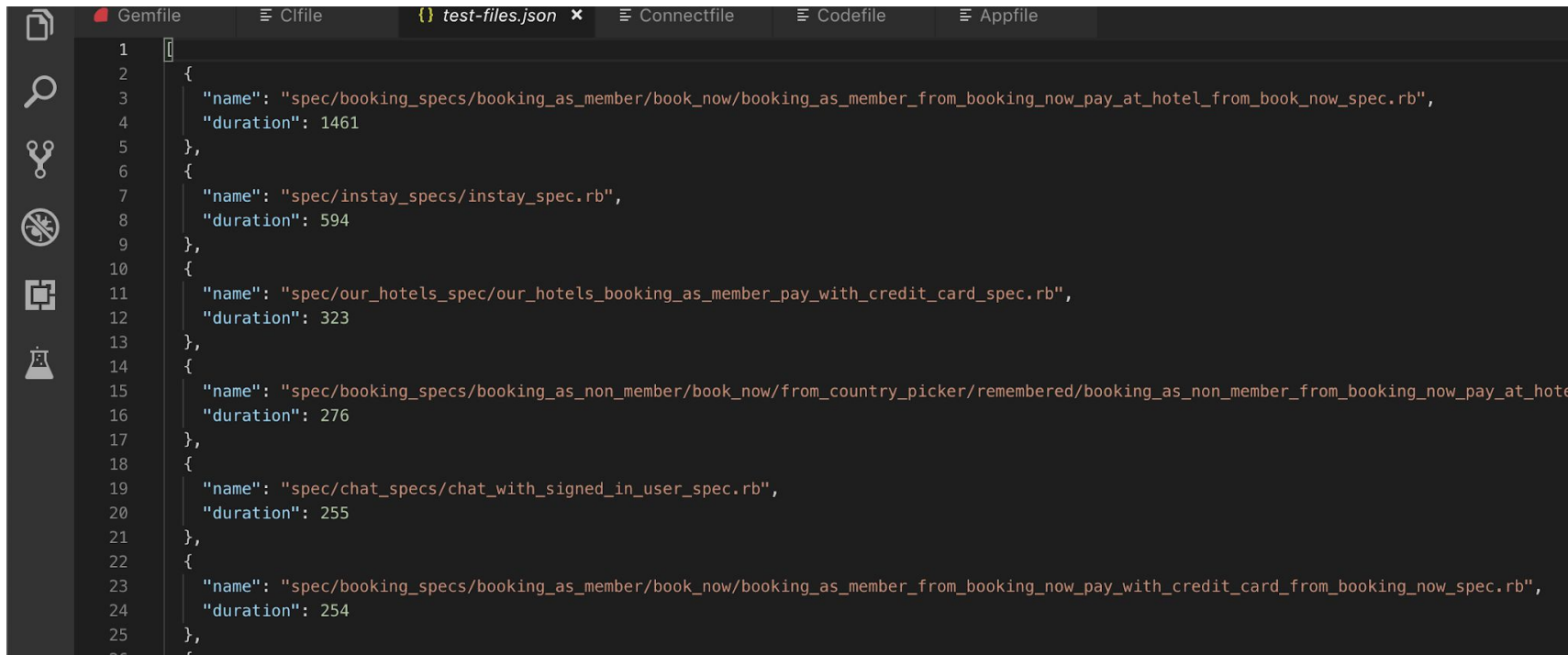
- `n` stands for:
  - Nimble
  - Numbers
- `Rspec` stands for:
  - Rspec



What does nRspec do?

# Achievement and Progress

Measure duration for each spec file.



```
1  {
2    "name": "spec/booking_specs/booking_as_member/book_now/booking_as_member_from_booking_now_pay_at_hotel_from_book_now_spec.rb",
3    "duration": 1461
4  },
5  {
6    "name": "spec/instay_specs/instay_spec.rb",
7    "duration": 594
8  },
9  {
10   "name": "spec/our_hotels_spec/our_hotels_booking_as_member_pay_with_credit_card_spec.rb",
11   "duration": 323
12 },
13 {
14   "name": "spec/booking_specs/booking_as_non_member/book_now/from_country_picker/remembered/booking_as_non_member_from_booking_now_pay_at_hotel_spec.rb",
15   "duration": 276
16 },
17 {
18   "name": "spec/chat_specs/chat_with_signed_in_user_spec.rb",
19   "duration": 255
20 },
21 {
22   "name": "spec/booking_specs/booking_as_member/book_now/booking_as_member_from_booking_now_pay_with_credit_card_from_booking_now_spec.rb",
23   "duration": 254
24 },
25 }
```

## Achievement and Progress

- Firebase Integration
- CRUD - pec description
  - Spec name
  - Spec duration
  - Separated by branch and repository name

# Achievement and Progress

firebase

0.52

A long-lived project that still receives updates

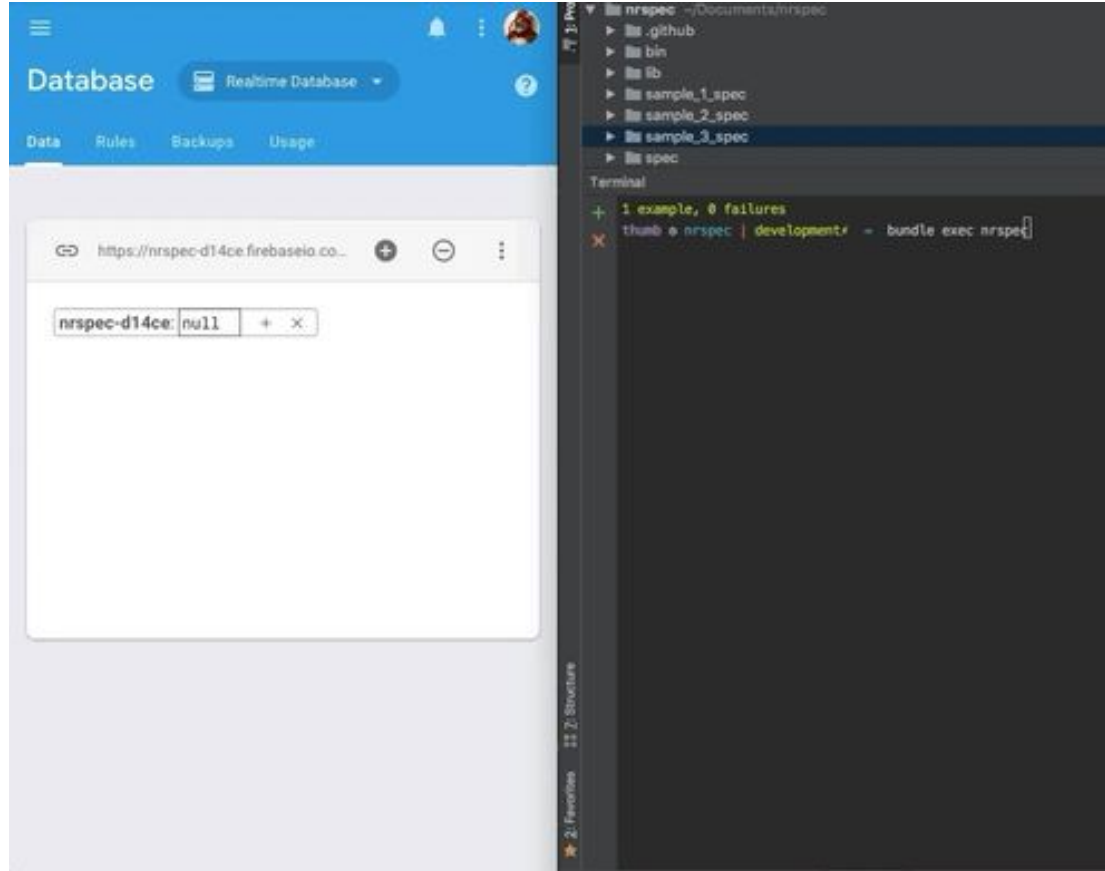
[firebase](#) [oscardelben/firebase-ruby](#) [Homepage](#) [Documentation](#) [Source Code](#) [Bug Tracker](#) [Wiki](#)

Firebase wrapper for Ruby

	DOWNLOADS	STARS	FORKS	WATCHERS
Popularity	671,397	573	96	22
	CURRENT VERSION	TOTAL RELEASES	FIRST RELEASE	LATEST RELEASE
Releases	0.2.8	16	over 6 years ago	12 months ago
	ISSUE CLOSURE RATE	PULL REQUEST ACCEPTANCE RATE	AVERAGE DATE OF LAST 50 COMMITS	REVERSE DEPENDENCIES
Activity	90%	62%	almost 3 years ago	5

+ Show more project details

# Achievement and Progress

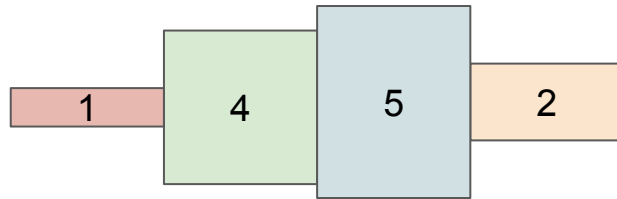




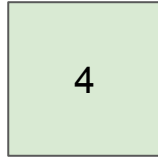
## Achievement and Progress

- Distributor logic
- Distribute spec into groups
  - Duration as weight
  - Partitioning Algorithm

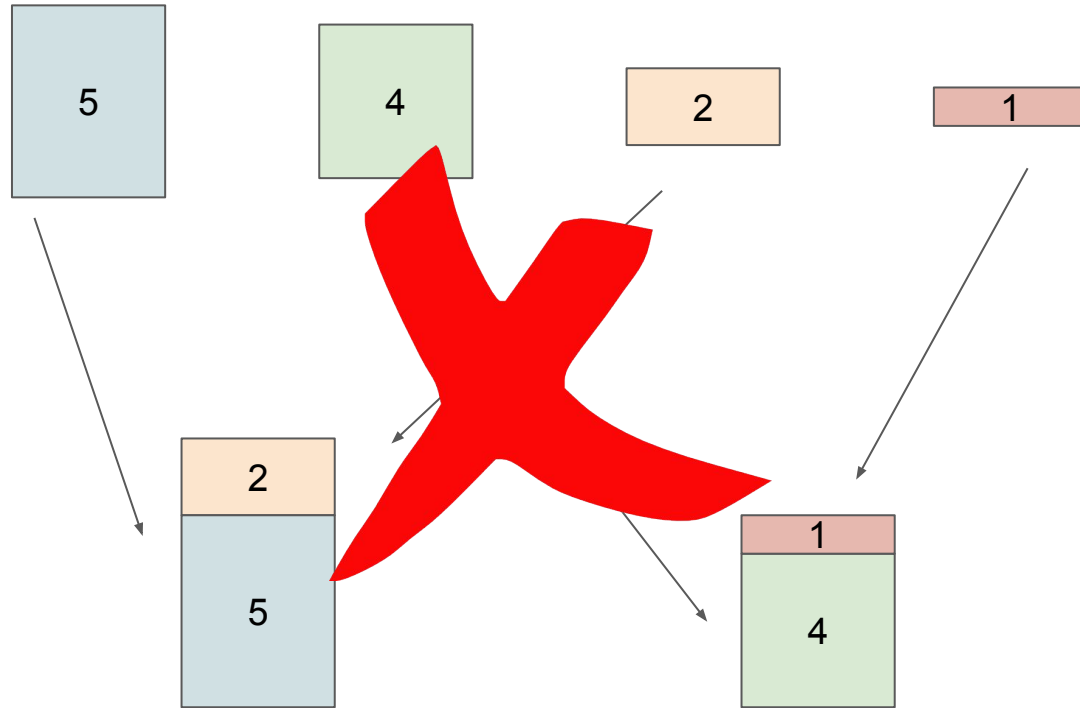
# Distribution



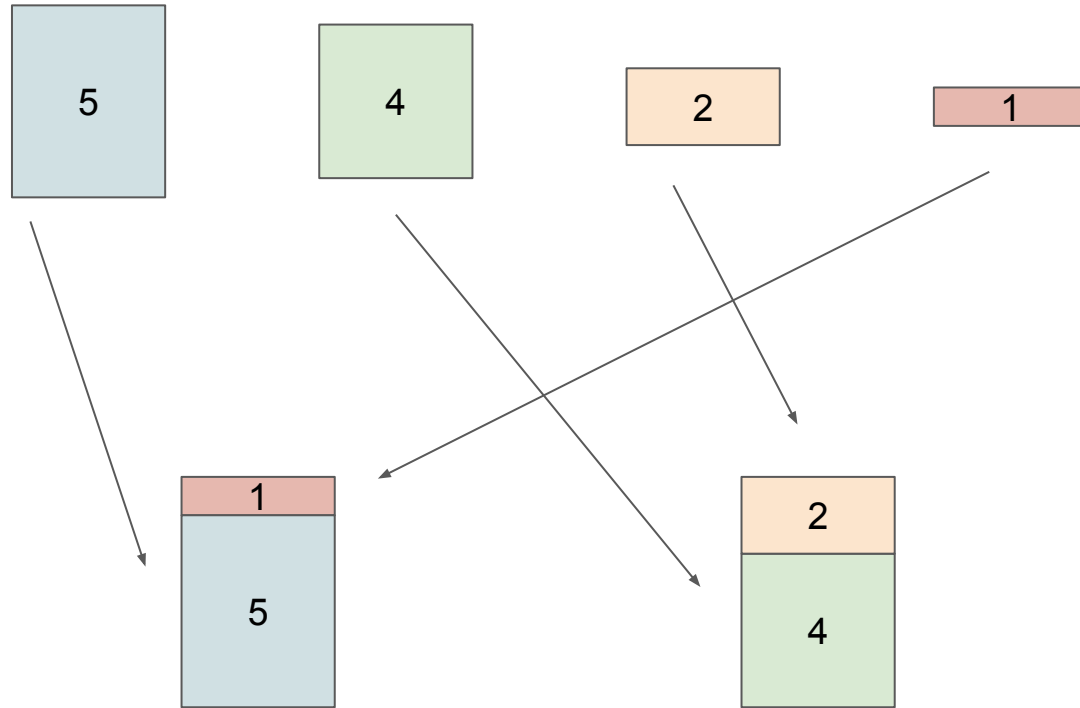
# Descending Sort



# Switching Distribution



# Partitioning Distribution



# Partitioning Distribution

```
Terminal
+ Local Local (1)
✕ thumb ▢ nrspec | feature/add-distributo
"total_group_duration"
[0, 0, 0]
"total_group_duration"
[11, 0, 0]
"total_group_duration"
[11, 10, 0]
"total_group_duration"
[11, 10, 9]
"total_group_duration"
[11, 10, 17] [11],[10],[9,8]
"total_group_duration"
[11, 17, 17] [11],[10,7],[9,8]
"total_group_duration"
[17, 17, 17] [11,6],[10,7],[9,8]
"total_group_duration"
[22, 17, 17] [11,6,5],[10,7],[9,8]
"total_group_duration"
[22, 21, 17] [11,6,5],[10,7,4],[9,8]
"total_group_duration"
[22, 21, 20] [11,6,5],[10,7,4],[9,8,3]
"total_group_duration"
[22, 21, 22] [11,6,5],[10,7,4],[9,8,3,2]
From: /Users/thumb/Documents/nrspec/lib
```

[11, 10, 9, 8, 7, 6, 5, 4, 3, 2]

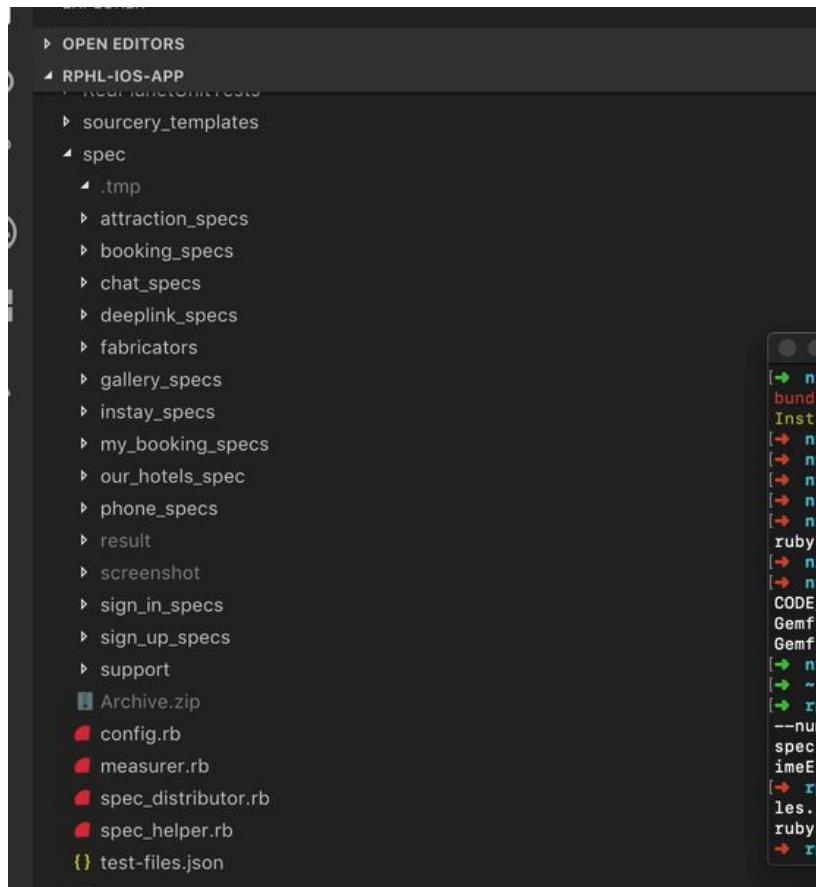
[11, 6, 5], [10, 7, 4], [9, 8, 3, 2]

[22, 21, 22]



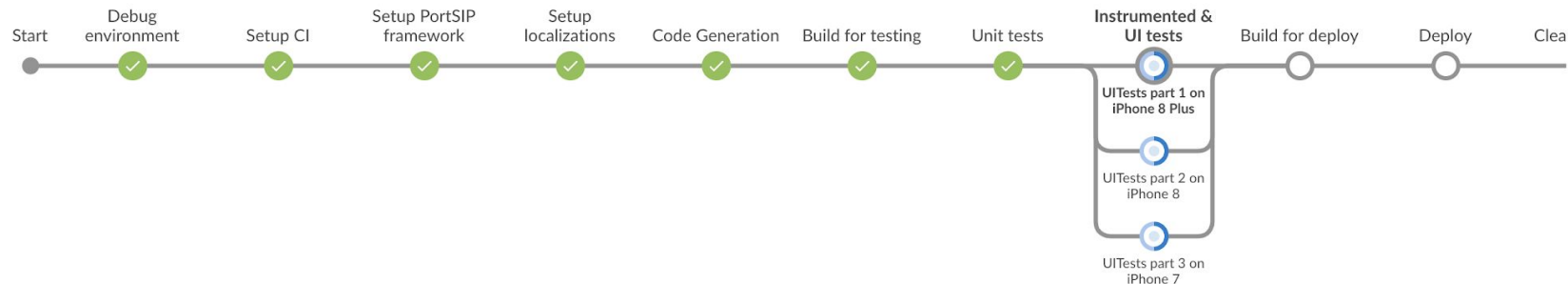
```
bundle exec nspec distribute --node_numbers 5
```

# Achievement and Progress





# Conclusion




Instrumented & UI tests / UITests part 1 on iPhone 8 Plus - 14s



✓	> Shell Script	<1s
✓	> sleep 10 — Shell Script	10s
○	> Shell Script	40m 15s

## Next Steps

- Replace rspec command:
  - ``bundle exec nspec ./spec/spec1_spec.rb``
  - ``bundle exec nspec ./spec/.tmp/0``
    - ``rspec`` runs only once.
    - ``nspec`` runs each spec and store duration statistics on Firebase
- Single command to distribute and run tests:
  - Currently this gem distribute spec into groups, running specs for each group is still manually done on the CI server
  - ``bundle exec nspec distribute --node_numbers 5``
    - Distribute spec then start running 5 specs groups inside this gem



It's not as simple as saying that multiple heads are better than one.

# Thanks!

## Contact Nimble

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