Lessons Learned From TA Practices

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2017.05.25

Content

- Practice: TDLTE BTS CRT
- Practice: BTSMED ET

- Lesson: What a good TA is
- Lesson: How to achieve a good TA

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TDLTE BTS CRT

COOP Server

HUB

CI Server

RRU

BBU

GPS

VM

CTL PC

Power CTL

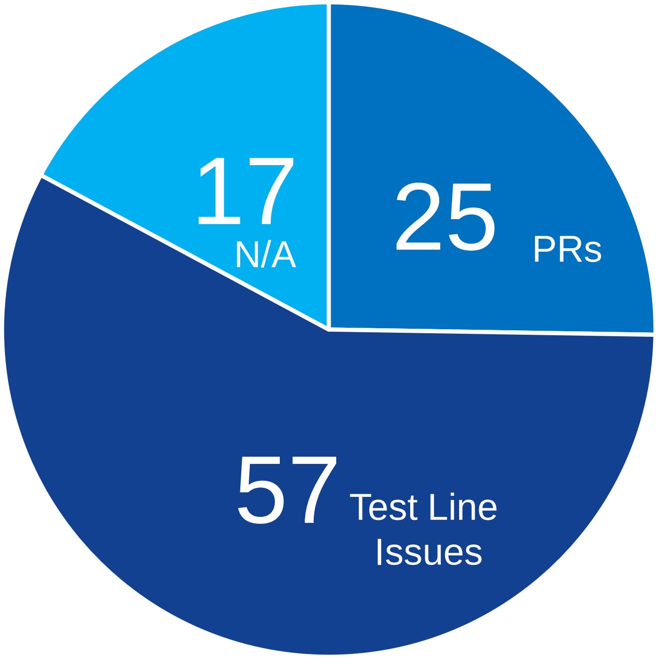
Test Line Info

TL conf.	UTE IP/port/loc.	UTE Host IP	UTE S1 port	BBU ID	BBU IP	BBU S1 port	BBU loc.	BBUPB IP/port	BBU PB S1 port	BBU GW	BBU mask	RRU loc.	RRU PB IP/port
FSIH FZHM 8Pipe	10.69.69.117 Eth2 AA1-5-1	10.69.69.121		1697	10.69.68.116		AA3-6	10.69.68.97 Port6		10.69.68.126	255.255.255.224	AA3-6	
FSIH FZHS 2Pipe	10.69.69.118 Eth3 AA1-5-1	10.69.69.121		1422	10.69.3.82	Switch 2-8	Y5-1	10.69.3.74 Port1	Hub1-7 Switch1-16	10.69.68.126	255.255.255.224	Z6-4	
FSIH FZND 2Pipe	10.69.69.100 P1p1 AA1-1-2	10.69.69.99		513	10.69.68.73		AA3-4	10.69.68.97 Port4		10.69.68.126	255.255.255.224	AA5-1	
FSIH FZHQ 8Pipe	10.69.69.119 Eth4 AA1-5-1	10.69.69.121		672	10.69.68.84		AA2-4	10.69.68.114 Port4		10.69.68.94	255.255.255.224	AA6-6	
FSIH FZFF 8Pipe	10.69.3.111 P10p1 Y1-1-1	10.69.69.112	Switch 1-4	1490	10.69.3.134	Switch 2-16	Y4-1	10.68.184.193 Port1	Hub2-1 Switch1-35	10.69.3.126	255.255.255.224	Z4-1	
AirScale FZHM 8Pipe	10.69.69.105 Eth1 AA1-3-1	10.69.69.104			10.69.68.93		AA9-6-L	10.69.68.103 Port2		10.69.68.94	255.255.255.0	AA8-7	

Test Summary

50+	2~4	5000+	87
runs/day	builds/day	runs in 3-months	reports in 3-months

Issue Summary



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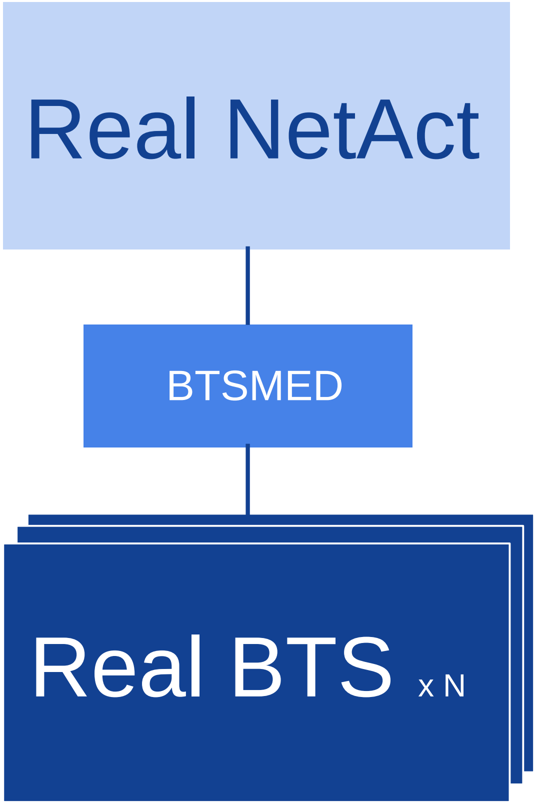
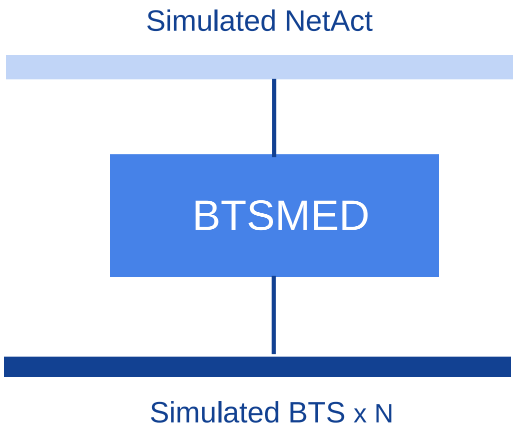
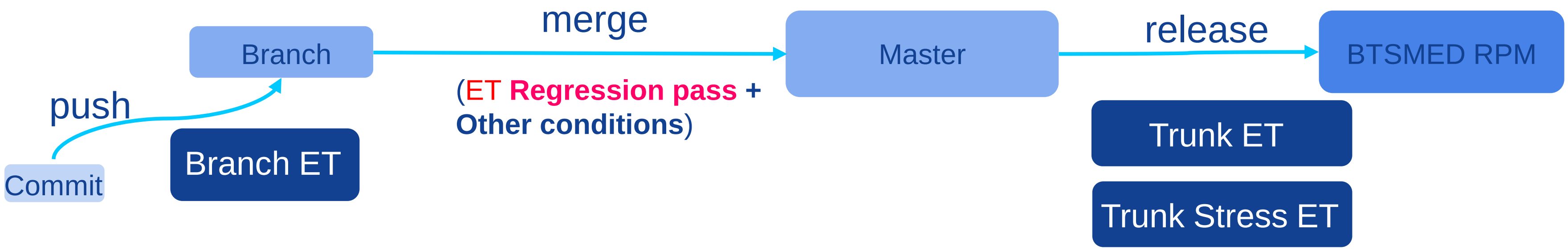
BTSMED ET





NBS: Simulated NetAct & SOAM BTS for BTSMED Testing, *http://gitlab.china.nsn-net.net/ta/nbs*
BTSMED ET: Automated Testing on BTSMED Functionalities, *http://gerrit.nsn-net.net/*, *IMP*, test/ET

Change-based BTSMED ET Regression

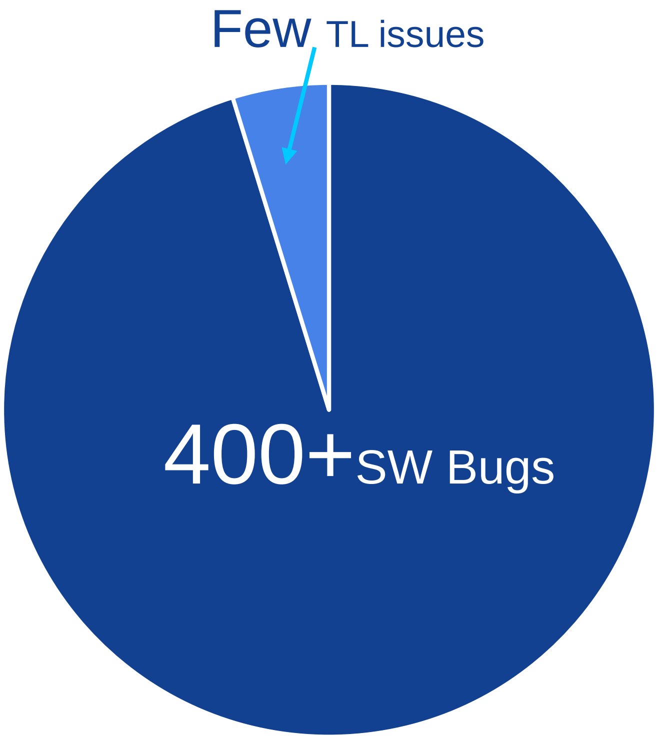


Job name	Case Num	TL Num	Time	Rounds	Comments
Branch ET	163	15	~7 min	~250	Run on every commit **quickly**
Trunk ET	190	1	~40 min	~15	Run on every **released** build
Trunk Stress ET	190	1	~40 min	~75	Run on newest builds **stressfully**

Test Summary

340+	250	5000+	+*N*
runs/day	builds/day	runs in 1-months	runs in local ENV

Issue Summary



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A Bad TA

Cannot find SW bugs efficiently

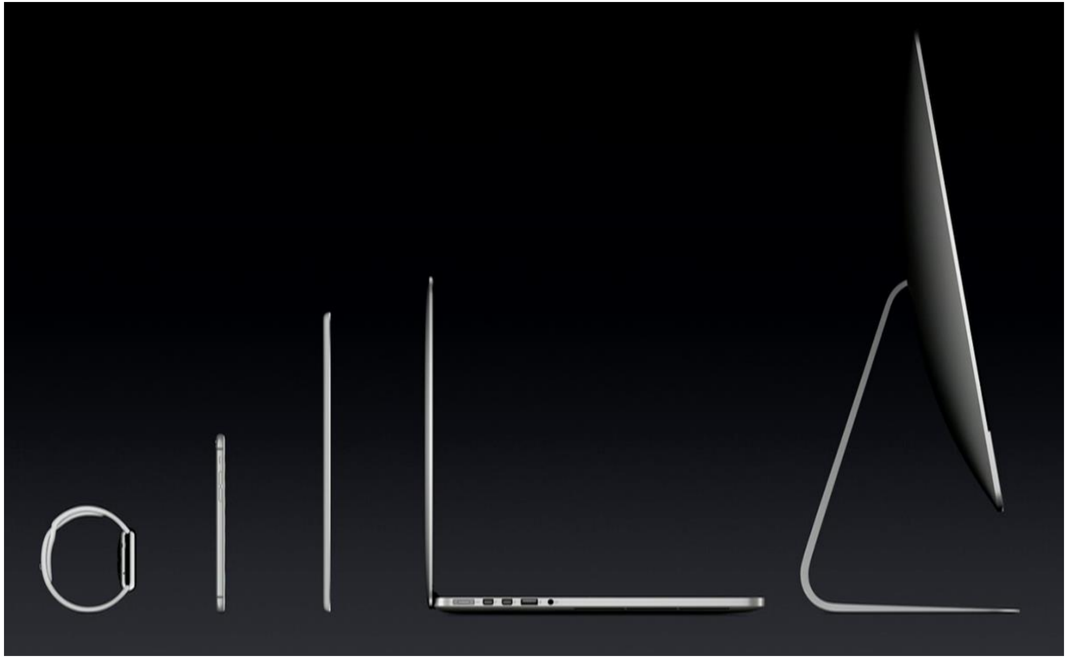
Find many TA issues

Test ENVs are unstable

Test lib/cases are hard to maintain

A Good TA

Simple and Reliable



TA Simplicity

How much efforts are needed to develop and maintain TA libraries and TA cases?

TA Reliability

How much confidence do we hold on that case failure is caused by SW bugs, not by TA itself?

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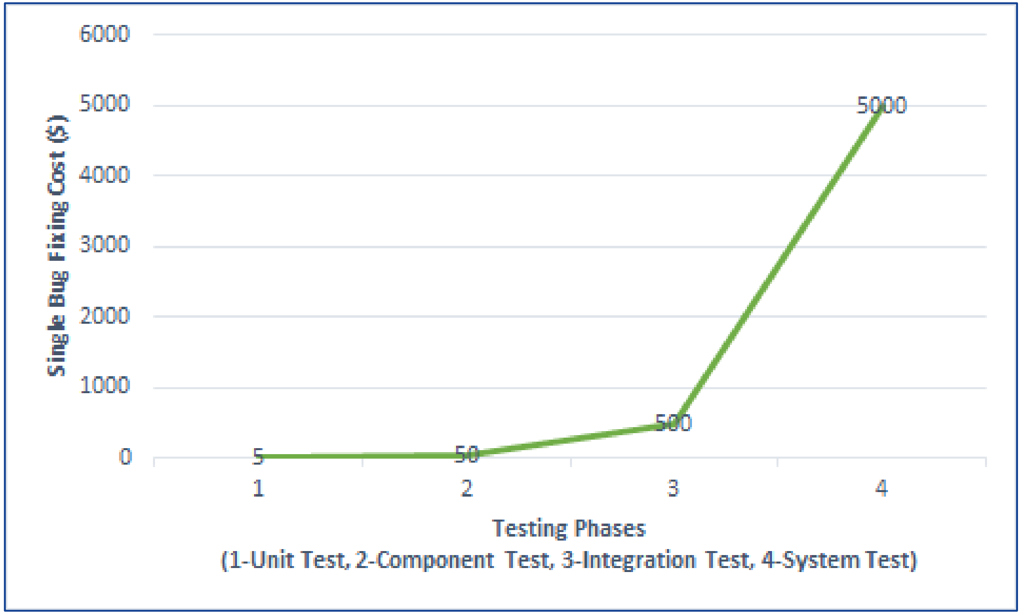
Invest on Automation of *Early* Test Stages

The Google Testing Law (谷歌测试定律)



As SW test proceeds(UT->CT->IT->ST or small->medium->large test), the *cost* of fixing a discovered SW bug increases at an *exponential* scale.

The Testing Coverage Law(测试覆盖定律)

For multi-stages SW testing, any SW bug discovered at the current test stage, could have been discovered at the *former* stage by increasing or modifying one test case.

Use *Mock* Technique As Much As Possible

Benefits of Mock

Focus On

Early

Cheap

Achieving A Good TA

***Test* of Test Automation**

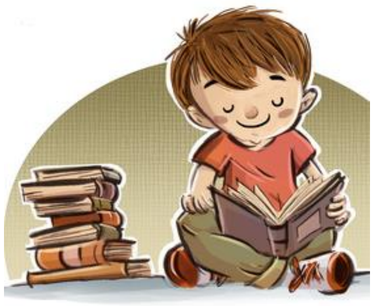
A Good Example: NBS

212	~20	1	2146	257
unit test cases	seconds	mocked BTSMED	commits	versions

TA Grooming

TA Case Review

TA Case Review



Cases be as readable as requirement docs

All cases follow common paradigms

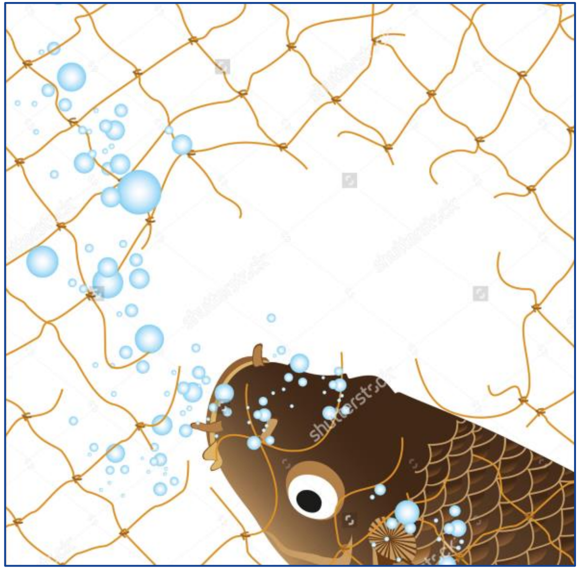
Large-screen meeting review

Everybody involved

Improvement by Escaped Defect Analysis

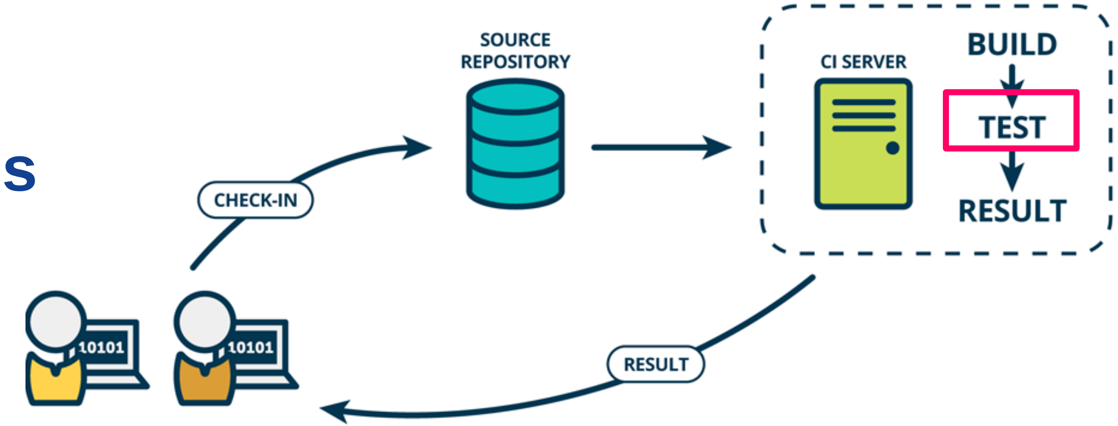
Escaped Defect Analysis (EDA)

1. For each issue proven to be TA bug, do EDA



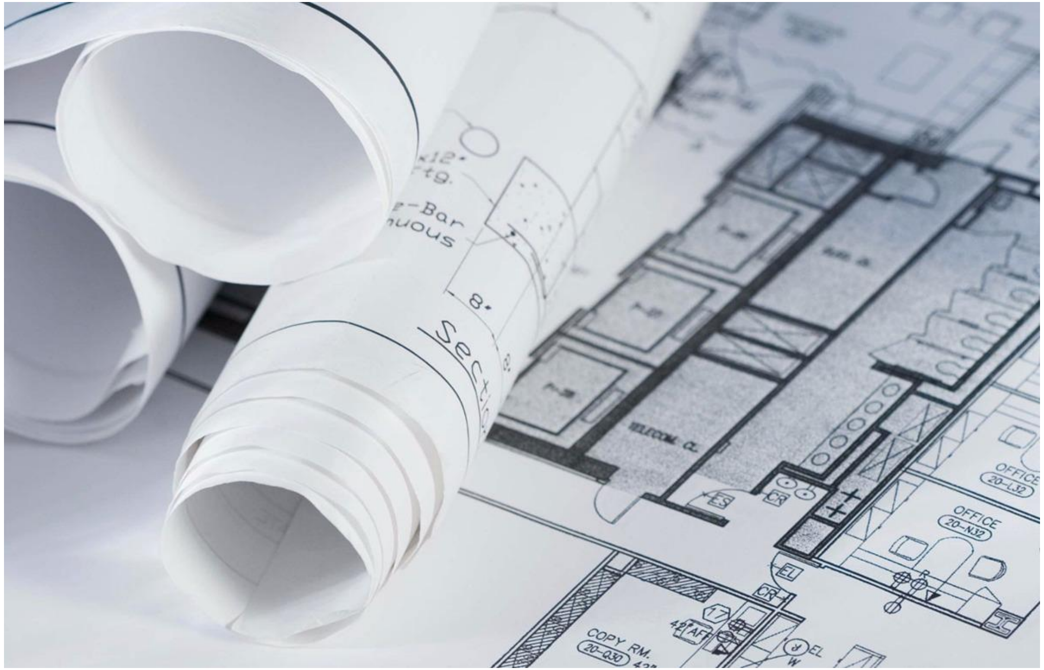
2. For each SW bug found by next-stage test, do EDA

Put *Fully* Automated Testing into Continuous Integration



Achieving A Good TA

Testability Matters in Software Architecture



Q & A

Learn More

TA Forum

My Blog

GTAC