

如何最大化软件测试效能?

Maximize Value!

朱少民

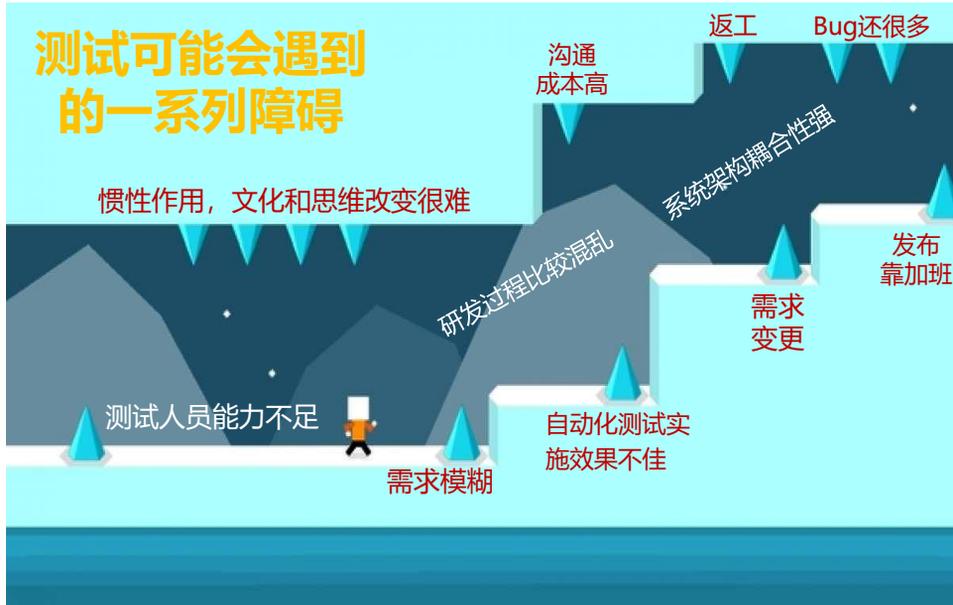
《全程软件测试》作者

QECon大会发起人

问题

软件测试工作瓶颈在哪里?

用例设计
缺陷报告
脚本开发
需求变更
测试分析
测试执行
数据准备
环境准备



如何不让测试成为绊脚石？



2018年09月04日 《软件质量报道》公众号文章

- 1 测试思维：突出团队对质量负责
- 2 测试周期：测试左移、测试右移
- 3 测试自动化：全生命周期覆盖的高度自动化
- 4 测试环境：虚拟化、云化、容器、CI集成
- 5 度量：全过程可视化
- 6 测试与开发融合，设立Test Owner/测试教练角色
- 7 组织的支撑：组织改革、文化革新

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今天从测试自身角度看 如何最大化测试效能？



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人是决定的因素



个人态度与能力、团队协作、组织文化等



Weapons are an important factor in war, but not the decisive one; it is man and not materials that counts.

— Mao Zedong —



问题



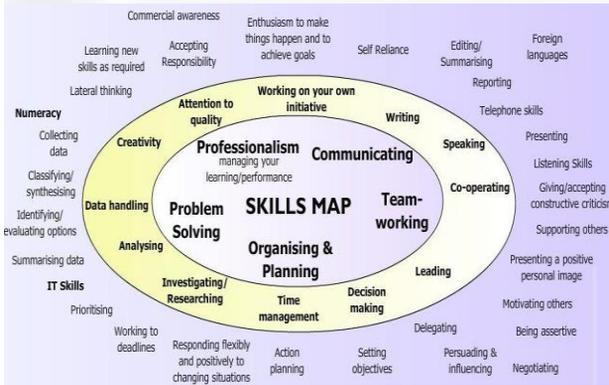
卓越的测试人员的价值是一般测试人员 多少 倍？

“一个卓越的车床工可以要求比一个普通的车床工多拿数倍高的工资，但一个卓越的程序员的价值是一个普通程序员的10000倍。”



— 比尔 盖茨

卓越的测试工程师是怎样的？



- 热爱测试
- 良好的思维能力
- 熟练运用测试方法
- 软件技术功底深厚
- 业务熟练、知识面广
- 良好的沟通能力
- 观察力、洞察力
-

态度决定一切，但我更愿意强调

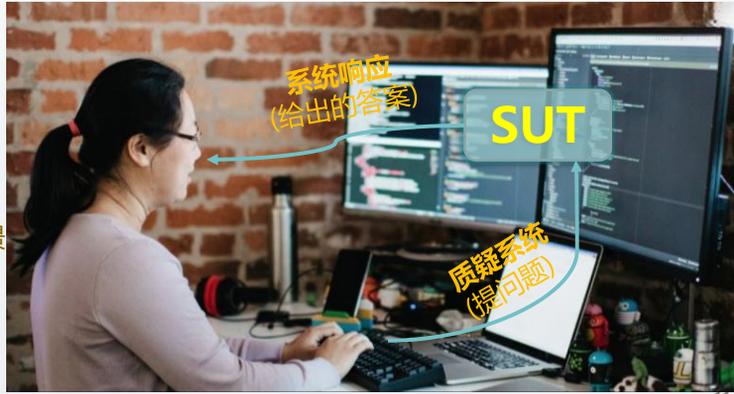
测试思维决定了测试人的价值与成长



批判性思维能力

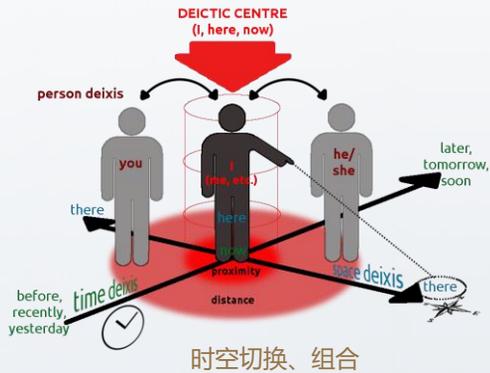
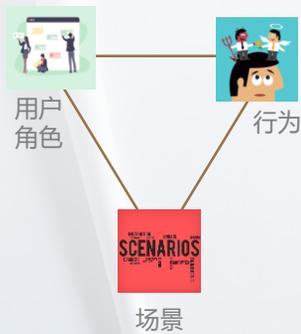
将 探索式测试、发现缺陷 做到极致

质疑假定、条件
持续反思、改进
不断深入系统
善于挖掘应用场景
.....

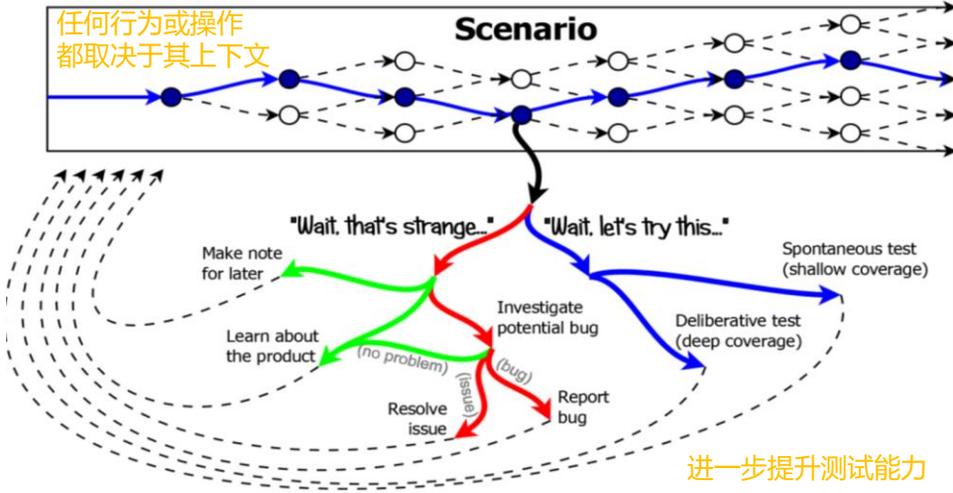


用户、行为与场景

许多同学傻傻分不清用户、用户故事/用例/用户行为、场景.....



上下文驱动思维



卓越的团队

团结起来就是力量，
但“能做”和“做得又快又好”还差十万八千里



全功能、学习型团队

	功能A	功能B	功能C	性能	UX	安全性
M1	●		●			●
M2		●			●	
M3	●			●		
M4			●		●	
M5		●		●		



开放 · 尊重 · 协作 · 反馈 简单 · 勇气 · 承诺 · 专注

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卓越组织的质量文化

一切以用户价值为依归

质量是团队尊严的起点

有条件的情况下，每周从客服提取10条客诉录音播放，听听用户肆无忌惮的谩骂和侮辱，品品内心撕心裂肺的疼痛和羞愧，在破坏的基础上重新建立起踏踏实实的尊严

ZERO DEFECT

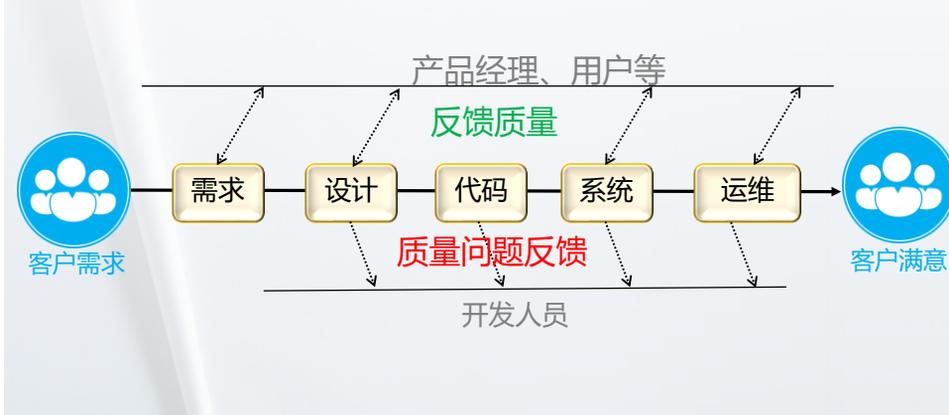
Quality built-in
Design for Quality
Design for Test

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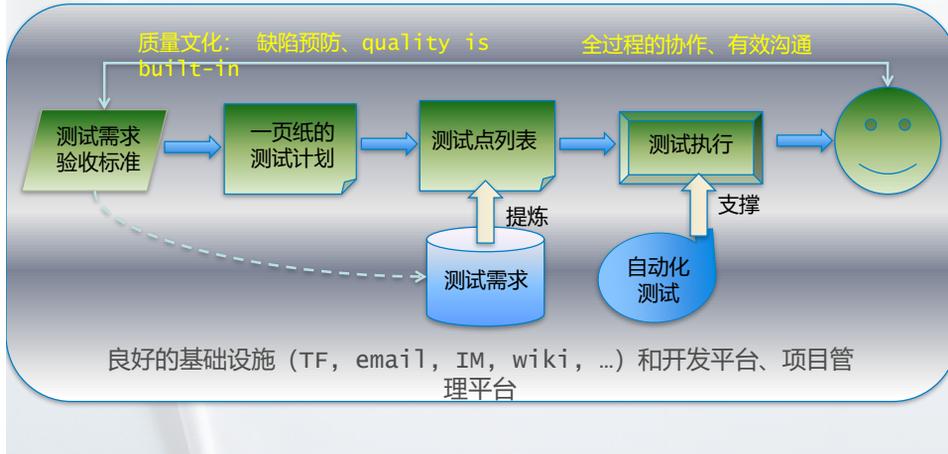


尽快地、持续的揭示质量风险

质量风险揭示的越早越快，
产品越好、项目风险越小、成本越低



测试流程力求简化、轻量化



一页纸的测试计划

最大程度地
简化文档

抓住测试计划的核心、要点即可

USABILITY TEST PLAN DASHBOARD				
AUTHOR DAVID TRAVIS	CONTACT DETAILS DAVID.TRAVIS@GERRYPOLLS.CO.UK +44 20 7947 4539	FINAL DATE FOR COMMENTS SEPTEMBER 16TH		
PRODUCT UNDER TEST What's being tested? What are the business and experience goals of the product? THE WEB SITE AT TEST SITE TRX	TEST OBJECTIVES What are the goals of the usability test? What specific questions will be answered? What hypotheses will be tested? DO PEOPLE UNDERSTAND THE VALUE PROPOSITION - THE CONCEPT OF AN ONLINE CONCERNING SERVICE? DO PEOPLE TRUST THE SERVICE? DO THE SMALL SELF PEOPLE PROCESS THROUGH THE VARIOUS STAGES?	PARTICIPANTS How many participants will be recruited? What are their key characteristics? 6-8 PARTICIPANTS RECRUITED BY PANEL. - ALL MUST BE IN FULL-TIME EMPLOYMENT - ALL MUST OWN A SMARTPHONE A MIX OF MEN AND WOMEN, HOMEOWNERS AND RENTERS.	TEST TASKS What are the test tasks? FIND OUT MORE ABOUT THE SERVICE AND BOOK IT. YOU WOULD SIGN UP FOR IT. SIGN UP FOR THE SERVICE. FIND A TRIPPER NUMBER AND CAN FIT YOUR NEW DISBURSEMENT VIEW THE OFFER AND ARRANGE A TIME FOR THE BUSINESS VISIT COMPARE 3 ALTERNATIVE OPTIONS ON THE TIME SLOT BOOKING SCREEN PAGE.	RESPONSIBILITIES Who is involved in the test and what are their responsibilities? DAVID TRAVIS (PM, DATA DESIGN) CLINE HART (DESIGNER) PETER HUNTER (EYE TRACKING) JOHN GRANT (CLIENT CONTACT) LES NEASMAN (TECH SUPPORT) LOUISE MANN (RECRUITMENT)
BUSINESS CASE Why are we doing this test? What are the benefits? What are the risks of not testing? THE TEST WILL ADDRESS SOME OF THE QUESTIONS THAT WE HAVE ASKED OUR BUSINESS OWNERS TO FOR THE NEXT CREATION. WE WANT TO KNOW THESE QUESTIONS NOW INCREASES THE RISK OF INTRODUCING THE WRONG PRODUCT.	EQUIPMENT What equipment is required? How will you record the data? LAPTOP WITH EYE TRACKING SOFTWARE AND MORA2 TEST SOFTWARE ALL SESSIONS WILL BE RECORDED TO DIGITAL VIDEO. WE WILL LOG USABILITY PROBLEMS AND MEASURE TASK COMPLETION RATE AND TIME ON TASK.	LOCATION & DATES Where and when will the test take place? When and how will the results be shared? SEP 20 @ UNDERWOOD 800 PROCESSION LONDON, 1017 1017 MAP: https://goo.gl/jumps EN18 PHONE DEDBY ON SEP 27TH	PROCEDURE What are the main steps in the test procedure? 0-5 MIN WELCOME / CONSENT FORM 5-10 MIN PRE-TEST INTERVIEW 10-45 MIN DARY OUT THE TEST TASKS 45-50 MIN POST-TEST QUESTIONNAIRE 50-55 MIN POST-TEST INTERVIEW 55-60 MIN DEBRIEF / PAY INCENTIVE	

The Usability Test Plan Dashboard is licensed under the Creative Commons Attribution-Share Alike 3.0 Unported License. Attribution: www.confront.co.uk/Usability/

质效合一：探索式测试+自动化

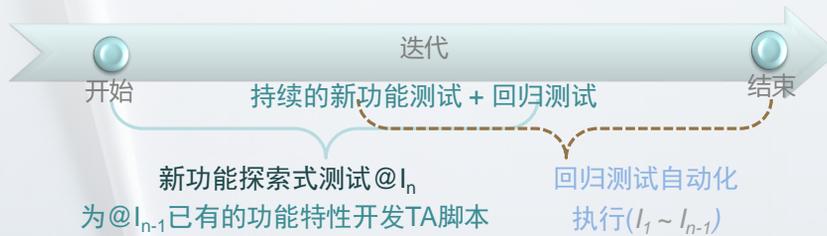
人更具有灵活性、适应性，能应付各种需求的变化

人能理解业务，也更具创造性，举一反三，发现缺陷能力远远超过工具

但所有做过的测试，都是已知的，100%自动化

工具 执行回归测试守护质量 倒是不折不扣

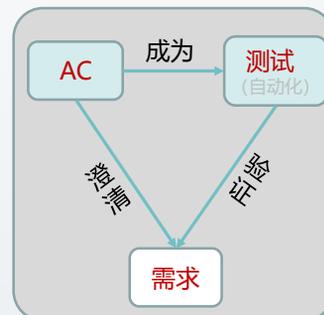
测试 = 已知的检测 + 未知的试验



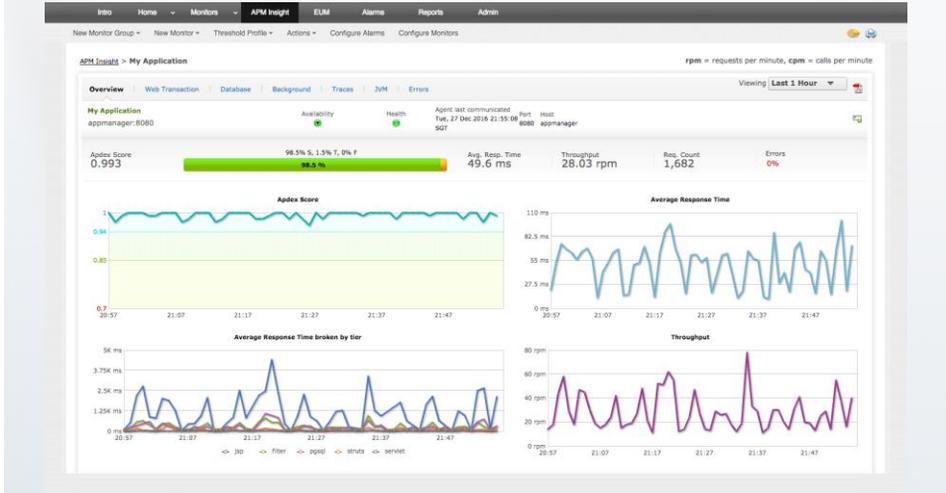
彻底的左移：需求即测试

验收标准 (Acceptance Criteria)

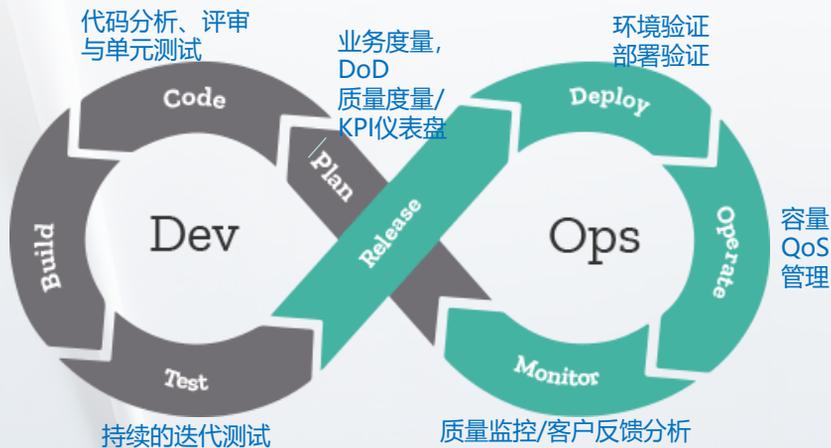
- 操作人/用户 Given [Precondition]
- 行为 When [Actor + Action]
- 可观察的结果 Then [Observable Result]



测试右移进一步缩短测试周期



最终形成质量改进的闭环



技术



Testing Techniques

卓越的测试技术

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自然会想到它



自动化测试

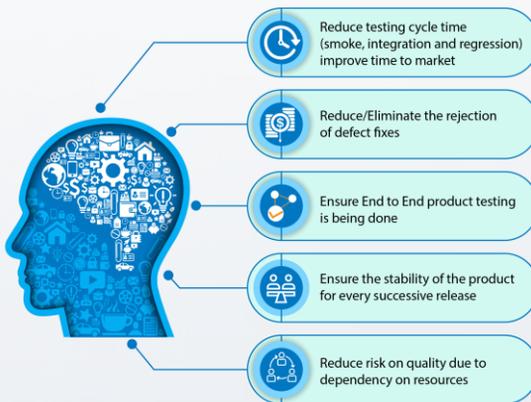
How can you
effectively implement
Test Automation?



良好的自动化测试策略

从而获得稳定的、有效的自动化测试

- 1 金字塔策略
- 2 全生命周期覆盖
- 3 持续实施、持续改进
- 4 与CI/CD集成
- 5 不变的测试环境
- 6 采用AI 技术
- 7



良好的自动化框架/基础设施

业务需求即测试需求，如用户故事的验收标准，并且借助类似GWT的DSL来开发测试脚本，让需求可执行

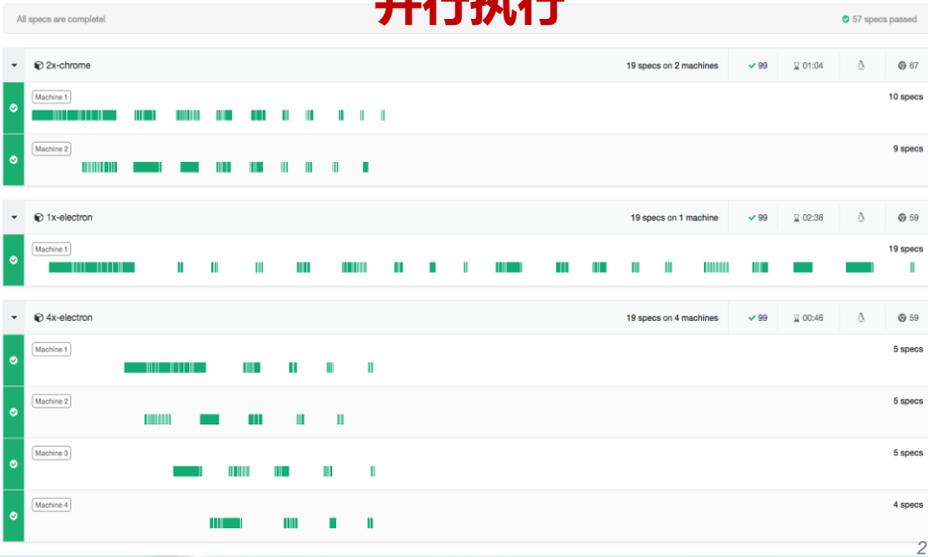
```
1  
2 Feature: 查看课程分销收益详情  
3 做为一名参与课程分销的用户，我想查看分销的收益详情  
4  
5 Scenario: 用户查看课程分享的收益详情  
6 Given 我成功登录在线教育网站  
7 When 我进入我的账户  
8 And 我进入课程分销中心  
9 Then 我应该看到我的分销收益详情  
10
```

```
1 package com.example;  
2 import io.cucumber.java8.En;  
3 import cucumber.api.java.en.And;  
4 import cucumber.api.java.en.Given;  
5 import cucumber.api.java.en.Then;  
6 import cucumber.api.java.en.When;  
7 import sun.security.util.PendingException;  
8  
9  
10 public class StepDefinitions implements En {  
11     @Given("我成功登录在线教育网站")  
12     public void 我成功登录在线教育网站() throws Throwable {  
13         // Write code here that turns the phrase above into concrete actions  
14         throw new PendingException();  
15     }  
16  
17     @When("我进入我的账户")  
18     public void 我进入我的账户() throws Throwable {  
19         // Write code here that turns the phrase above into concrete actions  
20         throw new PendingException();  
21     }  
22  
23     @And("我进入课程分销中心")  
24     public void 我进入课程分销中心() throws Throwable {  
25         // Write code here that turns the phrase above into concrete actions  
26         throw new PendingException();  
27     }  
28  
29     @Then("我应该看到我的分销收益详情")  
30     public void 我应该看到我的分销收益详情() throws Throwable {  
31         // Write code here that turns the phrase above into concrete actions  
32         throw new PendingException();  
33     }  
34 }
```

Specs

并行执行

Views: Timeline Bar Chart Machines



更彻底的自动化测试：MBT 软件质量报道 QualityReport

根据需求自动生成测试用例、数据，实现彻底的自动化测试



适宜、有效地运用测试方法

结构化方法

白盒方法

- 语句覆盖
- 判定覆盖
- MC/DC

基于需求验证的方法

黑盒方法

- 等价类划分法
- 边界值分析法
- 判定表方法
- 因果图法
- 组合优化方法
- 有限状态机

- E2E设计方法
- 基于场景的方法
- MBT 方法
- 故障注入
- 上下文驱动方法
- 形式化方法

善于使用各种工具

Checklists Internet testing

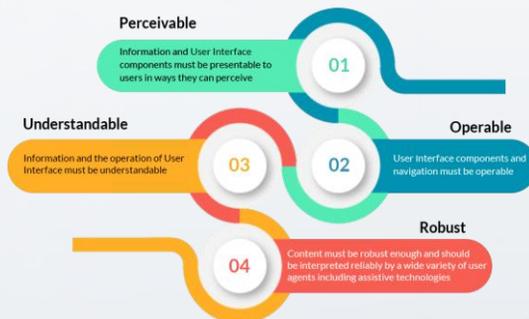
Description	Y	N	NA	Remarks
1. Are security measures taken (firewalls, encryption, passwords...)?				
2. Have procedures been set up that indicate what action to take when hackers attempt to break into the website, or have already broken through the website?				
3. Is there sufficient certainty about the identity of the user (authentication)?				
4. Does the user group have the correct authorisation? Is the user group authorised to do what he/she should be able to do and nothing more?				
5. Is the strength of the password (length, composition) adequate?				
6. Is the strength of the password (length, composition) adequate?				
7. Is the strength of the password (length, composition) adequate?				
8. Is the strength of the password (length, composition) adequate?				
9. Is the strength of the password (length, composition) adequate?				
10. Is the strength of the password (length, composition) adequate?				
11. Is the strength of the password (length, composition) adequate?				
12. Is the strength of the password (length, composition) adequate?				
13. Is the strength of the password (length, composition) adequate?				
14. Is the strength of the password (length, composition) adequate?				
15. Is the strength of the password (length, composition) adequate?				
16. Is the strength of the password (length, composition) adequate?				
17. Is the strength of the password (length, composition) adequate?				
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19. Is the strength of the password (length, composition) adequate?				
20. Is the strength of the password (length, composition) adequate?				
21. Is the strength of the password (length, composition) adequate?				
22. Is the strength of the password (length, composition) adequate?				
23. Is the strength of the password (length, composition) adequate?				
24. Is the strength of the password (length, composition) adequate?				
25. Is the strength of the password (length, composition) adequate?				
26. Is the strength of the password (length, composition) adequate?				
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31. Is the strength of the password (length, composition) adequate?				
32. Is the strength of the password (length, composition) adequate?				



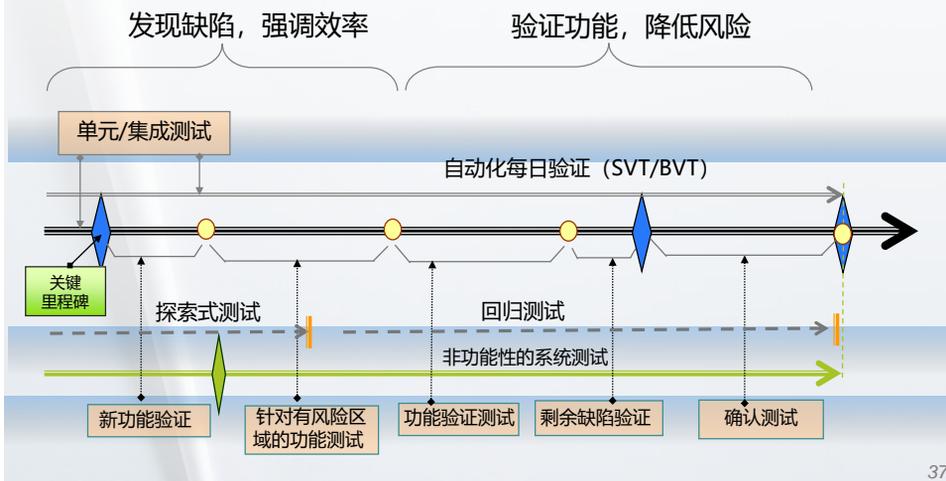


因地制宜采用测试策略

- 基于风险的测试策略
- 基于用户使用的测试策略
- 启发式测试策略
- 组合策略



示例：两段论和立体作战



让测试成为服务：赋能团队



整体卓越 = 持续测试



QECon
全球软件质量&效能大会
GLOBAL SOFTWARE QUALITY & EFFICIENCY CONFERENCE
深圳 | 5月28-29日

最后
广告时间

主办方:  QECon组委会
QECon Organizing Committee



Q & A

Thank you

软件质量报道

Design

Develop

Test

Document

Absences

Absences

Absences

Absences