
Early Test Paradigm - Architecture Testing

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Agenda



The Test Journey ...

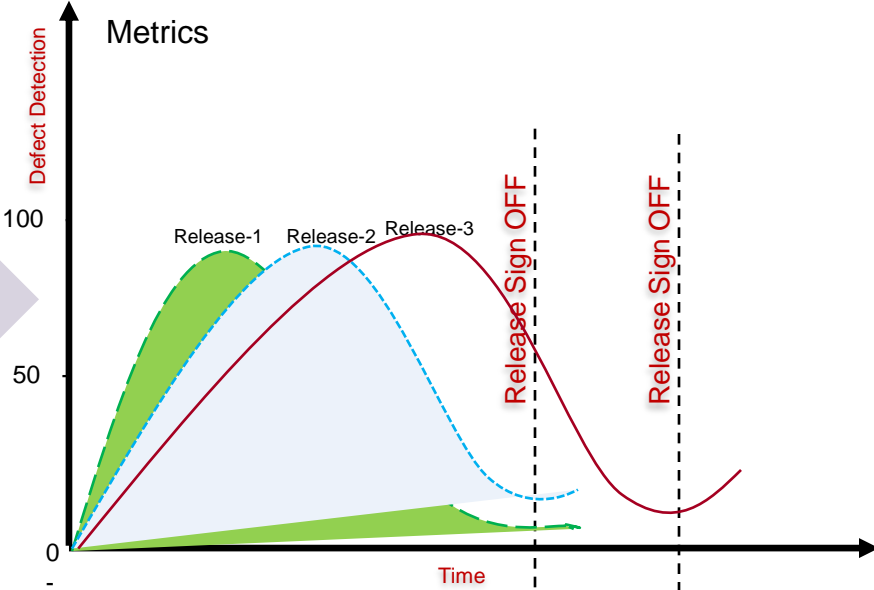
- ❖ Over The Wall
- ❖ V Model
- ❖ Test Optimization
- ❖ Test Metrics
- ❖ Test Reduction
- ❖ Small Teams - Early Test Paradigm

Early Test Paradigm - What has changed/is changing?

- ❖ Conformance to changing requirements
- ❖ Build quality vs Detect quality
- ❖ Co-automation
- ❖ Design for Test
- ❖ Architecture Testing
- ❖ Test Analytics

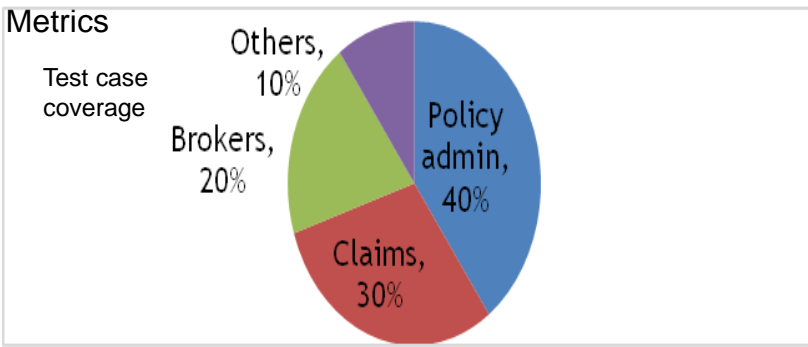
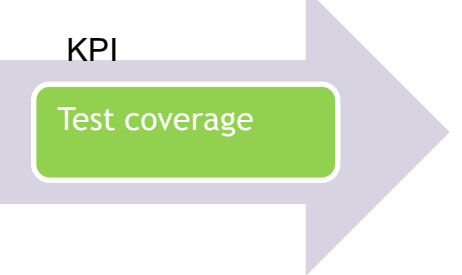
Early Test Paradigm - The Effects of it

WP – System & Reg testing
 WP – Interface testing



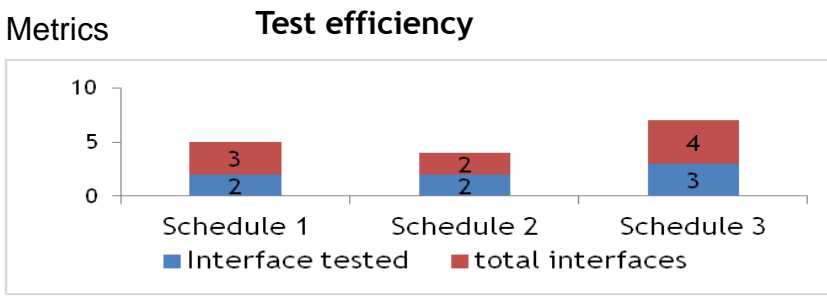
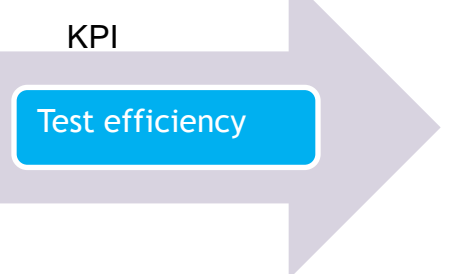
Number of defect reported in releases and early turn around time

WP – Test case creation



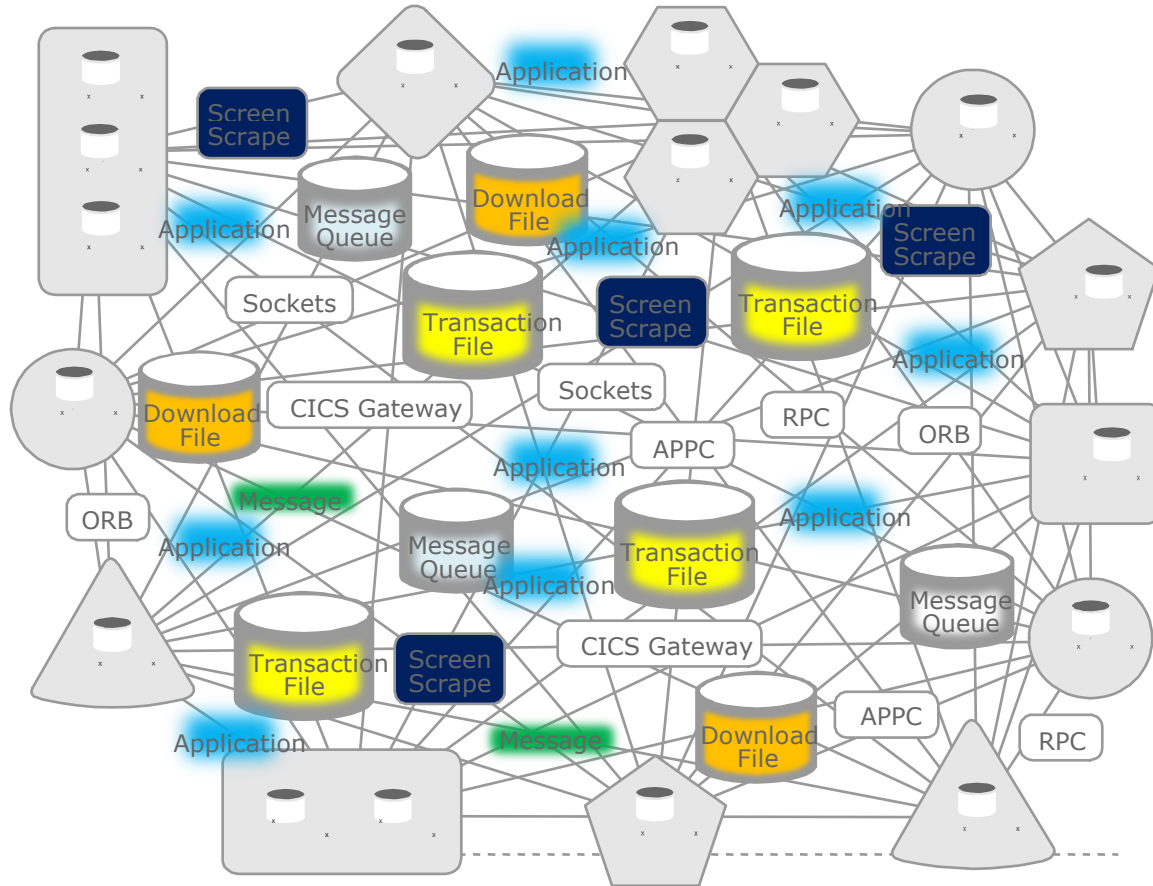
Number of test cases for business functionalities

WP – Interface testing



Number of Interface tested per cycle vs. planned no of interfaces per schedule

Architecture Testing



Suggested Testing Approach :

1. Use of Architecture Description Languages (ADLs), and graphical representation using Petri Nets
2. Software architecture regression based testing
3. Test for Architectural Conformance and Architectural Drift

AT&T Bell Lab's recommends formal review of architectures should happen during development phases "More than 50% of the bugs in systems are related to components interfaces" Thus, system-level faults must be specifically tested.

❖ Tightly integrated Component interfaces are difficult to test

❖ The more interfaces the more complex the application interface logic may exceed business logic test scenarios

❖ In such circumstances, re-usable frameworks becomes difficult and impractical

Architecture Testing using ADL's

Testing Technique for General ADL's



Applying the Testing Technique for an ADL's



Test for an Implementation



Architecture Testing - Aspects

- ❖ Architecture styles or patterns
 - ❖ Fault models identification
- ❖ Architectural design approaches
 - ❖ More testable systems
- ❖ Architecture Analysis
 - ❖ Tests reduction
 - ❖ Predictive analytics
 - ❖ Shorter test cycles

Architecture Testing - Fault Detection

	Architecture based	Manual	Coupling based
Number of Test cases	24	21	14
Faults found	14	10	8
Faults not found	2	6	8
Faults found %	87.5%	62.5%	50.0%
Test Effectiveness	58.3%	47.6%	57.1%

Architecture Testing - increase your Apps Lifespan!

- ❖ Architectures drift with time
- ❖ Maintenance becomes increasingly difficult
- ❖ If we can ensure that the architecture changes happen only by design we can increase the application life spans

... which is a huge value add!



Thank You