

# Test Automation from a Domain Perspective

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## Outline

- Test Automation - Our observations
- Regression Automation
  - Data Driven and Functional approaches
- Performance Automation
  - Technical and domain driven strategies
- Summary



## Test Automation-Our Observations....

- Why do we need Test Automation?
  - Common Assumptions
    - Effort and schedule reductions
    - Less people dependent
    - Required for multiple implementations
    - Volumes in Performance/Load/ Stress testing
  - Domain based considerations
    - Improve Quality & Rigor of testing by covering all linkages
    - Functional coverage demands testing with numerous data variations – which do not get compromised
    - High usage traffic scenarios during performance test can be simulated



## Test Automation-Our-Observations....

- Are we effectively using the tools ?
  - Every organisation purchases the tools with the objective of improving testing productivity
  - Mostly used for experimentation by small section of people who like technical activities
  - May not have good methodologies for successful use of automated packs creation and use
  - Zero documentation on packs created which results in just one time usage.
  - Complex environment required for performance testing unless planned well result in failure of such automation projects.



## Test Automation-Our-Observations....

### Technical View

- Manual test pack quality and completeness questionable
- Design based on screens
- Execution sequence based on application design
- Simulation of load based on number of terminals and repeating same transactions

### Functional View

- Coverage taken care of functionally
- Design based on functional grouping
- Execution sequence based on Business process flow
- Simulation of load based on type and typical business work flow of concurrent transactions



## Regression Automation

- **Traditional Approach** is purely technical and to make it functional need very strong methodologies
  - Record & Playback
  - Data driven
- **Keyword Driven approach** is an evolution to focus on business processes.
  - Breakdown application functions into a list of generic keywords
  - Creation of a Keyword Dictionary
  - Automation scripts for each keyword
  - Sequence the required keywords to test a business process



## Case Study – Regression Automation

- The Client
  - A leading International provider of Payment Solutions to Financial institutions
- Business Challenge
  - Their popular Payment solution product is customized for their clients
  - The Core product requires to be fully regression tested in each new implementation.
  - The manual regression testing accounted for nearly 70% of the implementation schedule and this need to be optimised
  - Ensure test script re-usability and maintainability.
  - Flexibility to incorporate Front end screen changes
- Solution
  - Team adopted a Keyword driven approach for regression automation

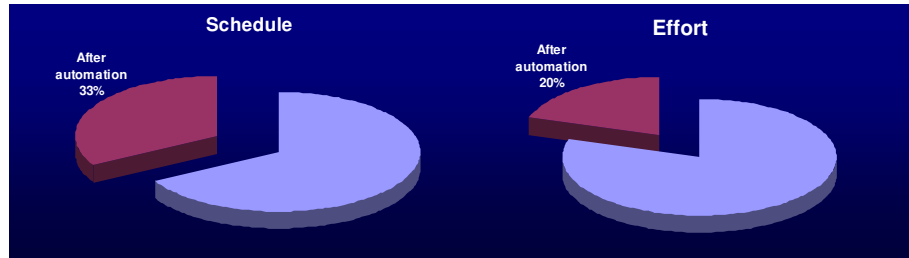


## Sample time savings in few transactions

S.No	Functionality	For Single Iteration (App)		For 10 Iterations (App)	
		Time taken by automation pack (in Secs)	Time taken in manual execution (in Sec)	Time taken by automation pack (in Secs)	Time taken in manual execution (in Sec)
1	Account Creation	69	275	345	2750
2	Card replacement	19	70	95	700
3	ARAT Txn Posting	20	76	100	760
4	ARTD Verification	15	54	75	540
5	Retail Authorisation	14	63	70	630
6	Account Transfer	17	61	85	610
7	Statement Verification	28	119	140	1190
8	Payment Hierarchy	25	102	125	1020
9	Manual Authorisation	14	48	70	480
10	Credit limit change	7	40	35	400
11	Manual Charge off	9	43	45	430
12	Loan Input	22	94	110	940



## Business Benefits



- Up to 67% implementation schedule reduction
- Quicker cutover to production
- Executed with a substantially smaller test team (potentially achieve up to 80% reduction in retesting efforts)
- Minimal re-work effort for every new Client
  - can typically start test execution within 2 days after Product setup



## Performance Test Automation

- Technical approach
  - Test critical transactions in isolation for response time
  - Define Load as number of users
  - Simulate target number of VU's
  - Create series of scripts to emulate any application activity
- Functional approach
  - Test multiple transactions that normally occur in a business day
  - Define load as Users actions / transaction types
  - Create Scripts as Load scenarios based on User profiles

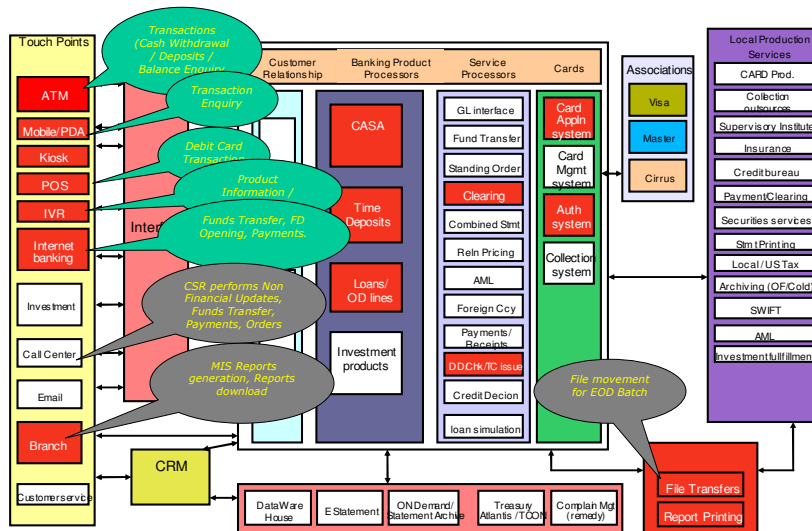


## Distribution of Transaction volumes

Transaction Type	User Priority	Actual Volume for			Average Volumes
		Jan	Feb	Mar	
Customer Creation	7.08%	1309	1868	2294	1737
Account Opening - Normal	8.13%	1503	2145	2634	1994
Account Opening - Loans	4.29%	793	1132	1390	1052
Cash Withdrawals	11.29%	2088	2978	3658	2770
Debit Card Transactions	5.43%	1004	1432	1759	1332
Loan Prepayments	3.59%	664	947	1163	881
Funds Transfers	5.78%	1069	1525	1873	1418
Remittances	9.34%	1727	2464	3026	2291
Standing Orders	7.49%	1385	1976	2427	1837
FD Opening	9.04%	1672	2385	2929	2218
FD Closures	4.22%	780	1113	1367	1035
IPO Processing	6.53%	1207	1723	2116	1602
Investments Management	9.28%	1716	2448	3007	2276
Product Queries	3.11%	575	820	1008	763
MIS Reporting	5.40%	999	1425	1750	1325
<b>Total</b>	<b>100.00%</b>	<b>18491</b>	<b>26381</b>	<b>32403</b>	<b>24531</b>



## RETAIL BANKING





## Key Performance indicators to check

- Transaction channels response time not to exceed 2 seconds
- Peak load to support usage by 20-30% of the Account portfolio
- Internal institutional users should be able to download MIS reports during peak business hours

*A typical Check would include Time out validation post transaction authentication during peak business hours*



## Summary

- Good Understanding the business processes is key when planning for regression as well as performance test automation
- Domain knowledge plays a key role in selecting all the right scripts for execution based on functionality changes, in test design as well as analysis of the reports during execution
- Considerable effort reduction and enhanced quality of results have been achieved in such projects by applying the domain based approach
- Any strategy that is strictly technical will not give the same returns on test automation initiatives.

# Thank You!

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