

Introductory Prototype

GGs TEST FRAMEWORK

Framework Intro

SoapUi-Driven Test Framework



TestFramework Charter

- Take over repetitive and tedious tasks so Validation can focus on analysis, quality and communication.
- Establish and enforce standard testing practices and tasks.
- Standardize reporting
- Standardize Tools
- Drastically improve output from ALL via good tools
- Eliminate congestion simply due to release velocity.
- Pay once, play “forever”
- Load testing imperative for next release
- TestFramework should be ‘easy’ maintainable

TestFramework Mission

- Find balance between power and complexity
- Footprint is extremely lightweight and portable (run from usb flash key)
- Leverage open source and free apps to gain advantage of tools without excessive cost
- Prepare test tools during development and Dev2Dev, publish for E2E.

Business Case

- R&D has more features than can be tested.
- GGS to meet them halfway for things that make sense with E2E domain
- GGS has no control over release counts/quality and must be flexible.
- Robots are flexible (well mostly..)
- People make mistakes...mistakes cost time... time = \$\$\$
- Computers can work 24hrs a day.
- Risk increases with

Dangers

- Too complex for everyone to use
- Gets expensive if API changes late in dev
- Not good for exploratory testing
- Can get in the way of actually testing
- Poor documentation ...implementation
- Basic 'Happy Path' scenarios not working until late in the game
- Losing control if interest from other units exists. (bring in a team to screw it up)

SoapUI

- Test Runner
- API documentation/sandbox
- Logs
- Routines
- Configure
- Tool/Automation
- FTP
- Groovy Script engine

Tools

- Browser: Selenium
- Android: EclipseADT/ADB.exe
- Excel: apache-poi/jxl
- Properties: Groovy
- Logs:
Groovy/WinSCP/Splunk/Batch
- SSH: XSHELL
- IDE EclipseADT

Framework Wishlist

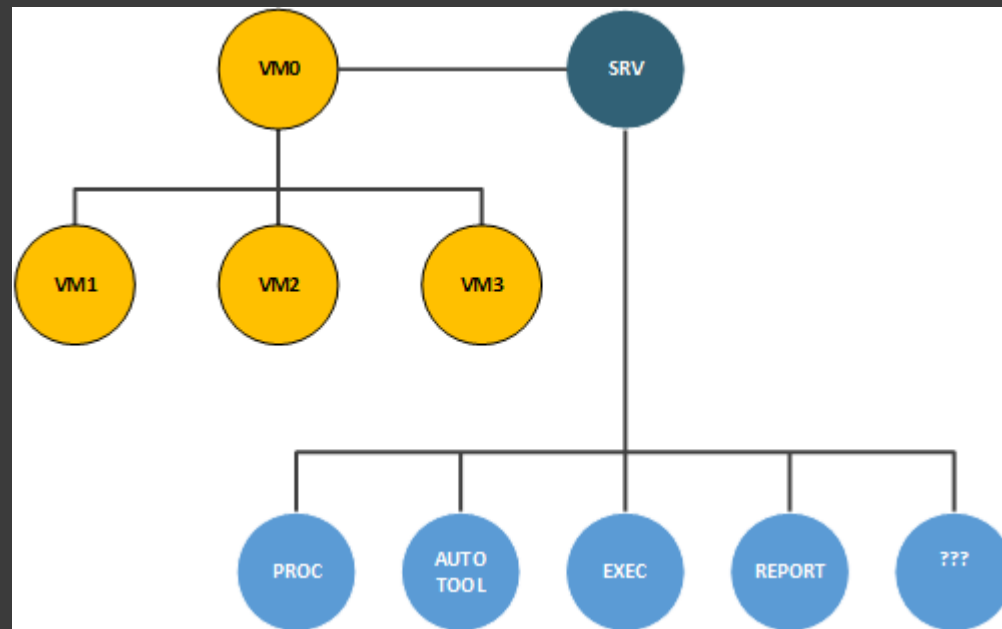
- Establish basic framework with strategies to extend further
- Simplify test execution, validation, reporting, and data mgmnt.
- Create network of VMs, each operating independently and receiving 'batch' test requests.
- Automate logfile collection, analysis and comparison
- Aggregate artifacts to SP or LAN share automatically

Roadmap

- “Connect the dots” first – get the damn thing working
- Get to using it... THEN use Agile to fix as needed
- Server and VMs/USB Packages
- Get coverage/usage
- Simulator Control
- Logging/Verification
- Reporting/Excel
- Standardize Ops
- iOS? <- No Feedback from R&D
- Sharepoint Updates

LAN Architecture

- Central Server for Framework releases, tools
- VMs for Test Execution.

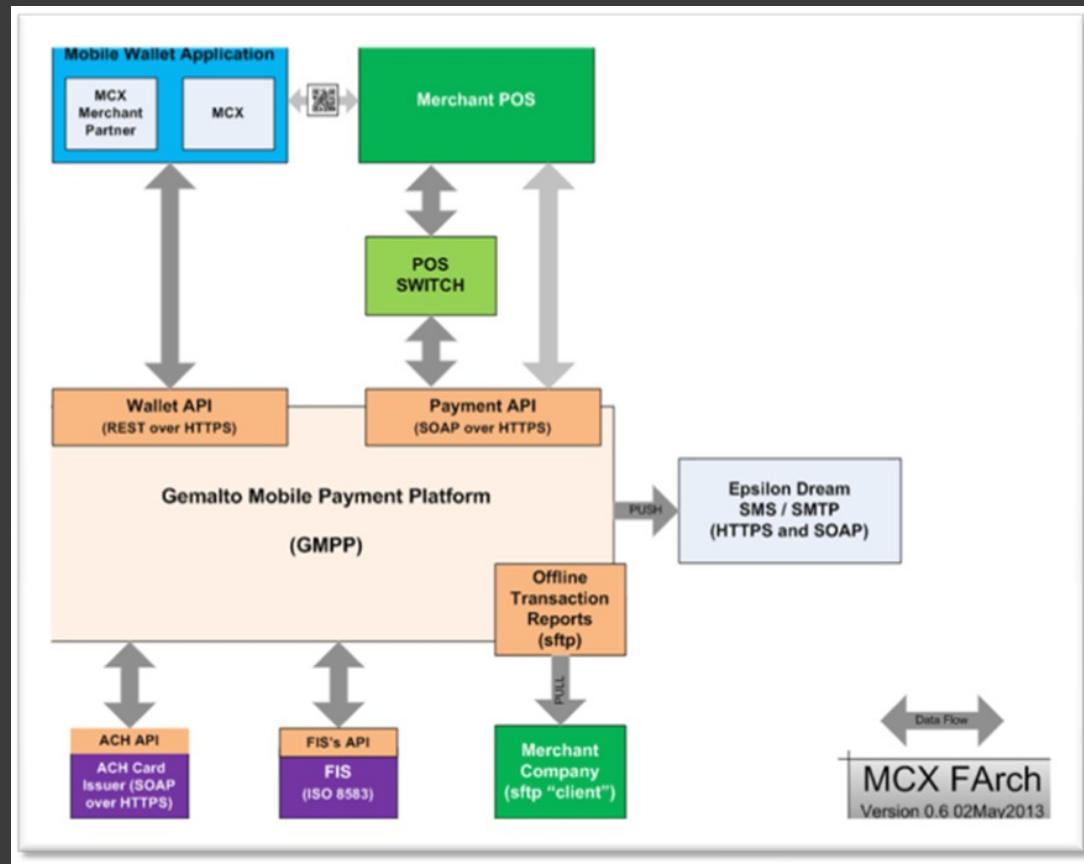


Product Under Test

MCX Mobile Payment Platform

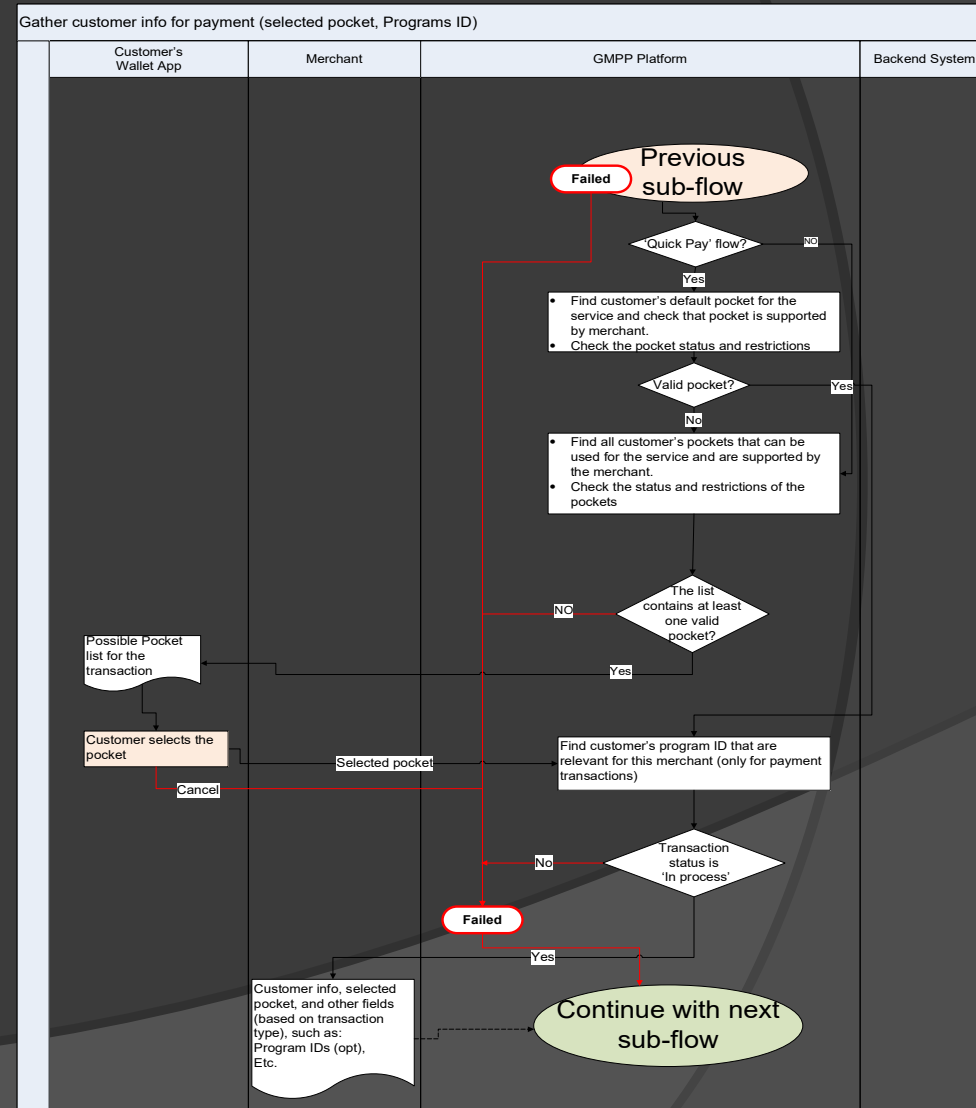


MCX Drop1



Flow Diagrams

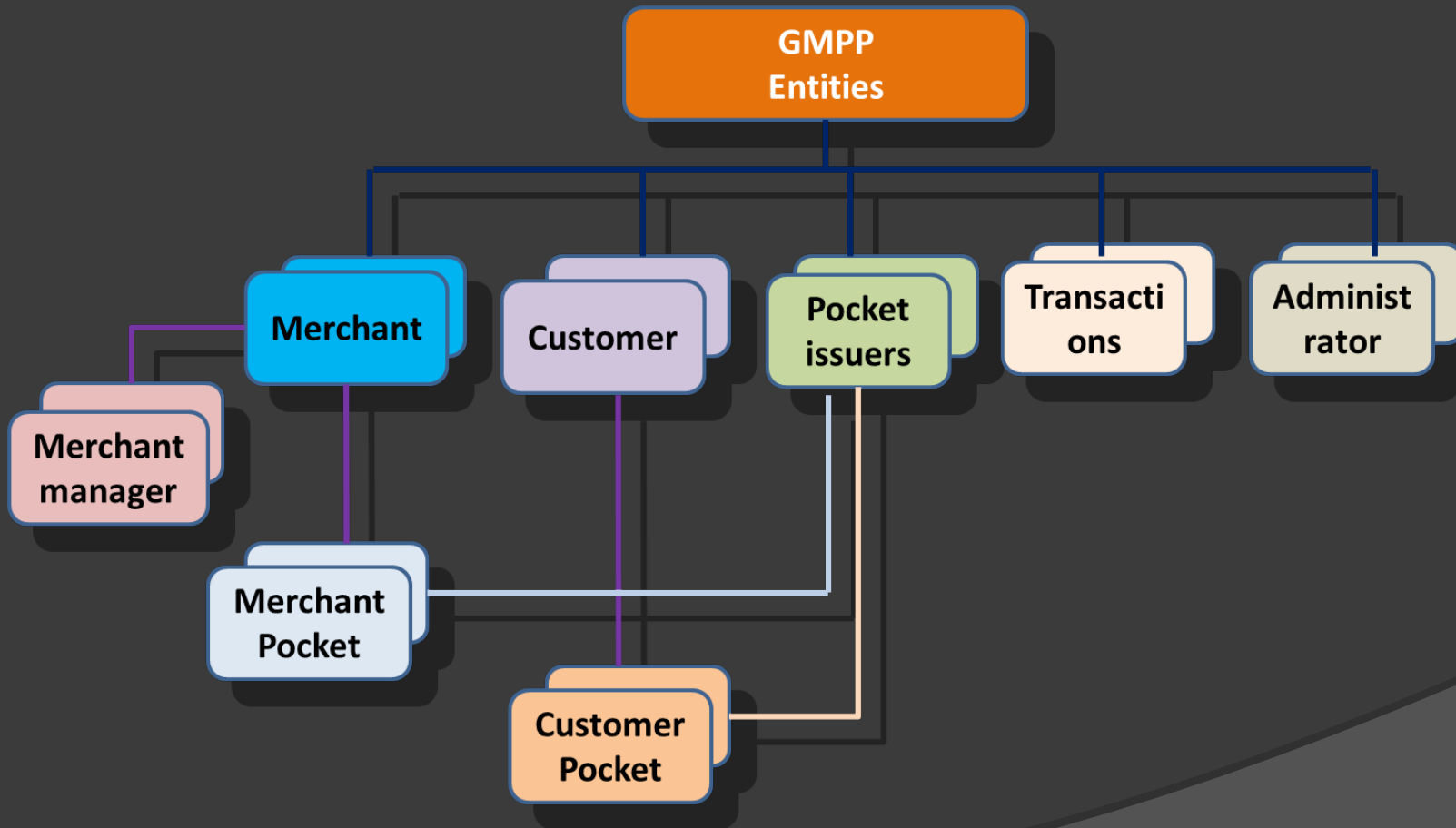
- Defines Use Case GGS Validates
- UC001, FLOW2: FLOWS 1,2,3,4,5
- UC002 uses FLOWS: 6,2,3,4,5



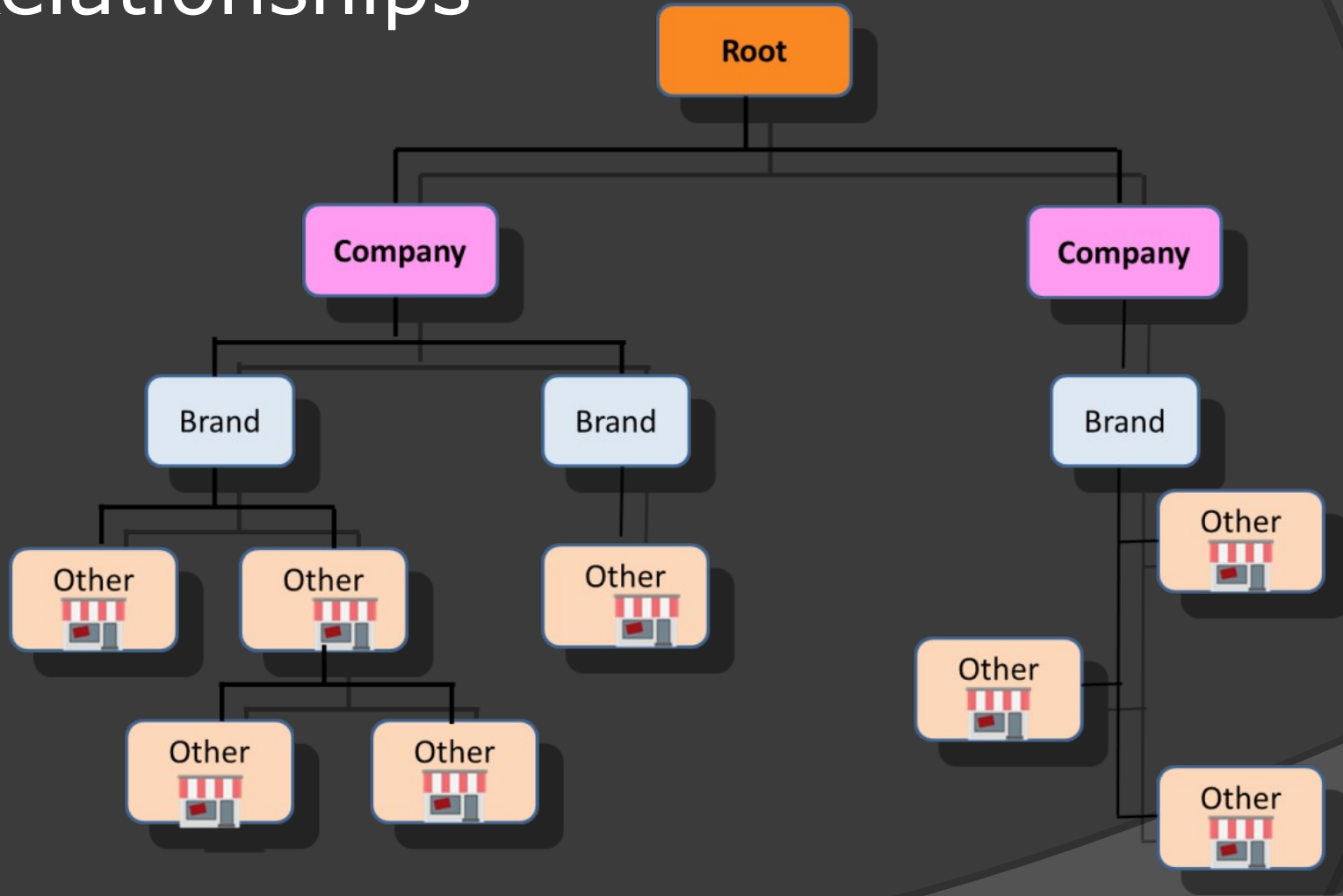
Flow Diagrams

Requirement Identifier	UC Identifier	Flow Diagrams	UC Title
F#_1000_A_C_E	UC_001	1-2-3-4-5	Payment via Dynamic QR Code displayed by POS
F#_1005_A_C_E	UC_002	6-2-3-4-5	Payment via Dynamic QR Code displayed by Wallet App
F#_1010_A_C_E	UC_003	1-7-5	Get Transaction via Dynamic QR Code displayed by POS
F#_1012_A_C_E	UC_004	6-7-5	Get Transaction via Dynamic QR Code displayed by Wallet App
F#_1014_A_C_E	UC_005	1-8-5	Get Wallet via Dynamic QR Code displayed by POS
F#_1016_A_C_E	UC_006	6-8-5	Get Wallet via Dynamic QR Code displayed by Wallet App
F#_1020_A_C_E	UC_007	9	Standard Refund
F#_1022_A_C_E	UC_008	10	Post Void
F#_1025_A_C_E	UC_009	1-2-3-4-5	Non Reference Refund
F#_1030_A_C_E	UC_010	11	Get Transaction History
F#_1035_A_C_E	UC_011	12	Customer Registration via Wallet App
F#_1040_A_C_E	UC_012	13	Add Pocket

GMPP Entities



Merchant Node Types and Relationships



Standardized Cust/Merch

[illegible]

Who's got MFS WebUI??

The screenshot displays the MCX (Merchant Customer Exchange) web interface. At the top, the MCX logo is on the left, and user information 'Hello Master Admin | Log out' and 'Last login time: 10/23/13 23:...' is on the right. Below this is a navigation bar with tabs: 'Customer Care', 'Merchant Care' (selected), 'Business Configuration', and 'System Settings'. Under 'Merchant Care', there are links for 'Merchants' and 'Add New Merchant'. A breadcrumb trail shows 'Home > Merchant Care > Merchants > BRAND1 > Merchant Details'. A search box is present with 'Search Merchant' and 'Search Transactions' tabs. Below the search box is a table with columns: 'Merchant ID', 'Merchant name', 'Contact phone number', 'Status' (set to 'Any'), 'Sort by' (set to 'Default'), 'Merchant network' (set to 'Select'), and 'Sub-merchant' (set to 'Any'). There are 'GO' buttons for the search and filters. Below the table, a summary for 'BRAND1' shows 'Status: Active', 'M: 15121118881', 'E: GCBRAND1@gmail.com', and 'Class of service: Merchant default COS'. The main content area is titled 'Merchant details' and has a left sidebar with a tree view: 'Account details' (expanded), 'Merchant details' (selected), 'Programs', and 'Quick setup'. Under 'Merchant details', there are links for 'Staff', 'Financial information', 'Sub-merchants', 'Transactions report', and 'Add sub-merchant'. The 'Business details' section contains a list of fields: 'Merchant node type: BRAND', 'Parent: GemaltoCompany', 'Retailer brand: BRAND1', 'Merchant name: BRAND1', 'Merchant ID: 3102T16SC9A8', 'Merchant external identifier: BRAND1', 'Class of service: Merchant default COS', 'Language: English (United States)', and 'Time zone: Central Standard Time'. An 'EDIT' button is next to the 'Merchant node type' field. At the bottom of the main content area, there are links for 'Contact details' and 'Administrative information'. On the right side of the 'Merchant details' section, there is an 'Actions' panel with buttons for 'Retire', 'Suspend', and 'Absolute lock'.

MCX MERCHANT CUSTOMER EXCHANGE

Hello Master Admin | Log out
Last login time: 10/23/13 23:...

Customer Care Merchant Care Business Configuration System Settings

Merchants Add New Merchant

Home > Merchant Care > Merchants > BRAND1 > Merchant Details

Search box

Search Merchant Search Transactions

Merchant ID Merchant name Contact phone number Status Any Sort by Default Merchant network Select Sub-merchant Any GO GO

BRAND1

Status: Active M: 15121118881 E: GCBRAND1@gmail.com
Class of service: Merchant default COS

Account details Merchant details Programs Quick setup

Staff Financial information Sub-merchants Transactions report Add sub-merchant

Merchant details

Business details EDIT

Merchant node type: BRAND
Parent: GemaltoCompany
Retailer brand: BRAND1
Merchant name: BRAND1
Merchant ID: 3102T16SC9A8
Merchant external identifier: BRAND1
Class of service: Merchant default COS
Language: English (United States)
Time zone: Central Standard Time

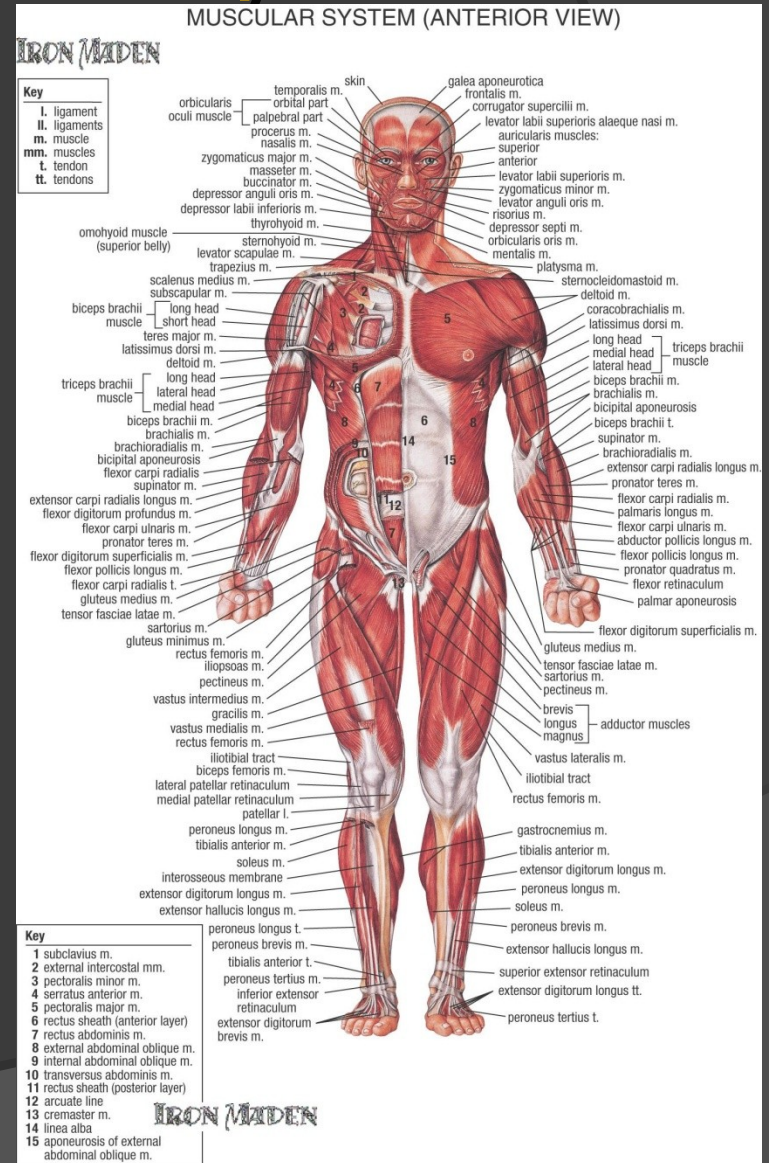
Contact details
Administrative information

Actions

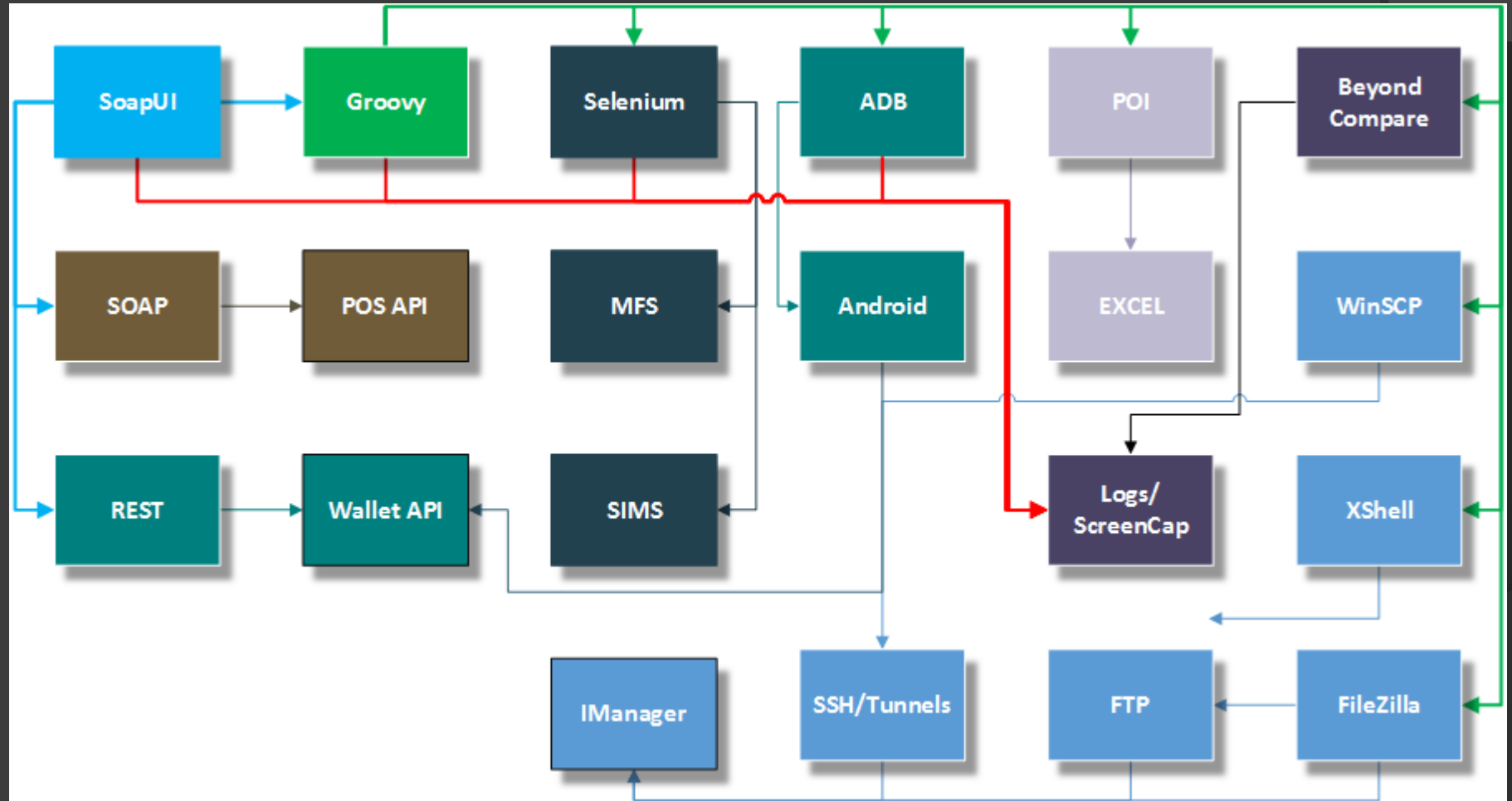
Retire
Suspend
Absolute lock

MCX Automation Anatomy

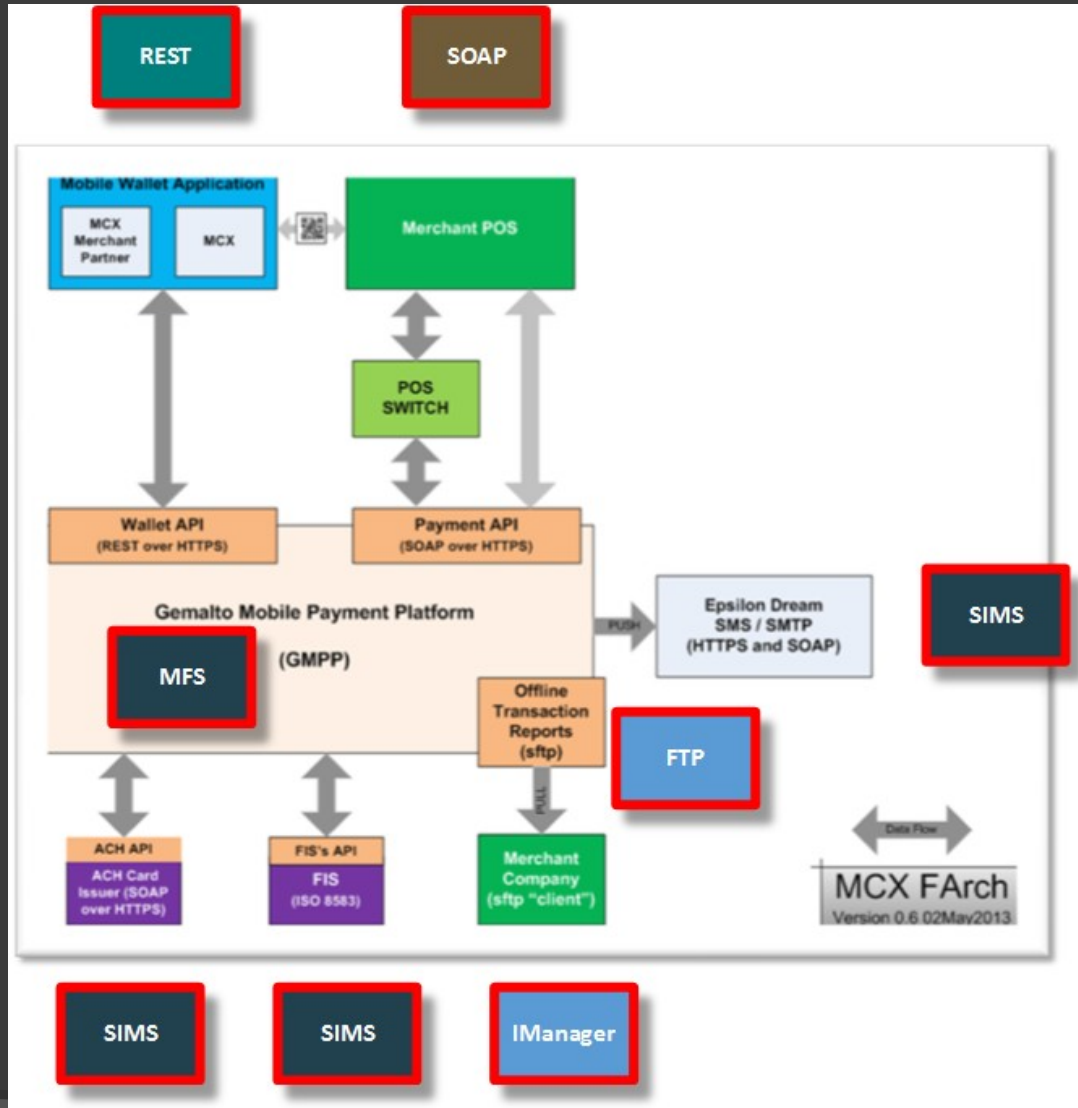
SoapUI Extensions via Groovy



Framework Blocks



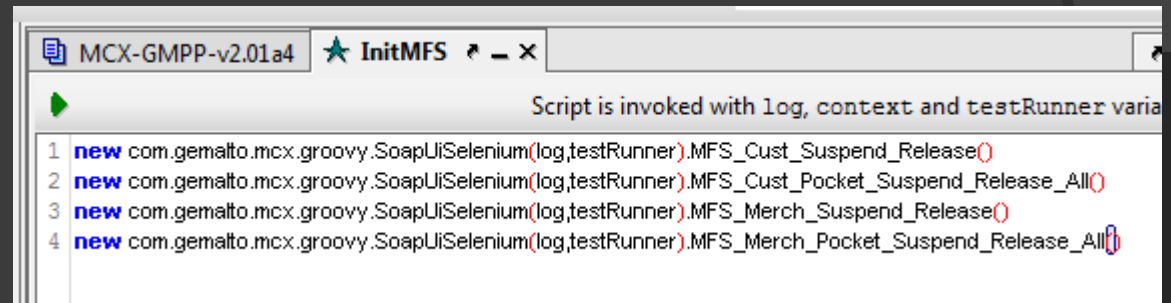
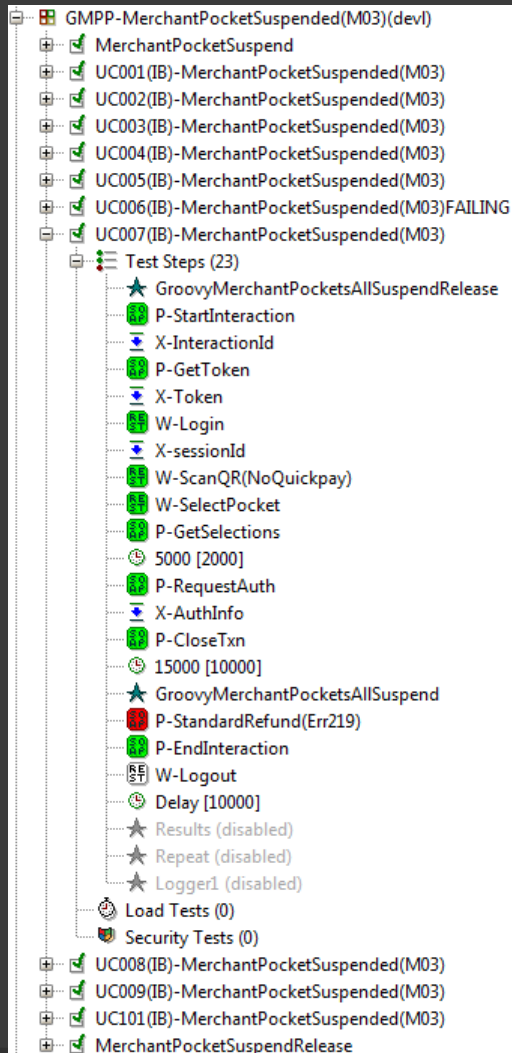
MCX: Drop1 with Blocks



Sample Lib Methods



Groovy Script Test Step



Snippets

Snippets

Snippets

Excel: Create Applets

- Same Workbook 'Applet' for Docs/Notes, Planning, Execution, Data Lists, Test Exec/Status
- SoapUi Properties list create from reading Excel sheet
- Updates in ONE place serve MANY
- Data Driven Test

MFS Merchant Configurations

VAL1

	1	2	3	
GTOD1E2E	Business	Contact	1st Staff	Pocket

Excel: Create “Applets”

MFS Merchant Configurations

VAL1

	1	2	3	
GTOD1E2E	Business	Contact	1st Staff	Pocket

	1	2	3	
GTOD1E2E	Business	Contact	1st Staff	Pocket

	1	2	3	
PenTest	Business	Contact	1st Staff	Pocket

Excel: Properties for Import

MFS Merchant Configurations						
VAL1						
1						
GTOD1E2E		Business				
		Merchant Name	External Id		Merchant ID	MSISDN
	Company	GTOE2ED1			312YCAK1LQF4	9999981000
	Company	GTOE2ED1			312YCAK1LQF4	
	Brand1	GTOD1E2EB1			315GQCUWG3K0	9999981100
		GTOD1E2EB1M1			316G6G82IUPS	9999981101
		GTOD1E2EB1M2			312LXOP40WSG	9999981102
		GTOD1E2EB1M3			310HQQ13VBB4	9999981103

Excel: Properties for Export

F37		184J2OIF8GSG															
		<div><div><div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div>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Excel: Test Scheduler and Status

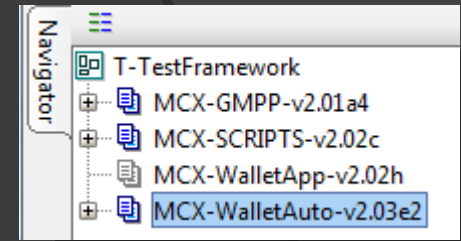
- Update Test Status/Errors in Excel from SoapUI
- Possible to Specify Test Suites or create a template for each test run with standard components

B	C	D	F	J	N	O	S	W	AA
E2E Agenda Checklist									
Time	X	Items	Wm	Tr	Int	Sa	Km	Sr	
		Pass	7	6	45	0	0	0	
		Fail	2	4	11	0	0	0	
		Blocked	2	11	1	0	0	0	
		Investigate	21	9	0	0	0	0	
		Not supported	46	26	0	20	0	0	
		Total	41	61	87	23	1	1	
		NoRun	22%	51%	34%	13%	100%	100%	
		Pass	17%	10%	52%	0%	0%	0%	
		Fail	5%	7%	13%	0%	0%	0%	
		Blocked	5%	18%	1%	0%	0%	0%	
		Investigate	51%	15%	0%	0%	0%	0%	
		Not supported	112%	43%	0%	87%	0%	0%	
		Total	100%	100%	100%	100%	100%	100%	

Excel: Test Scheduler and Status

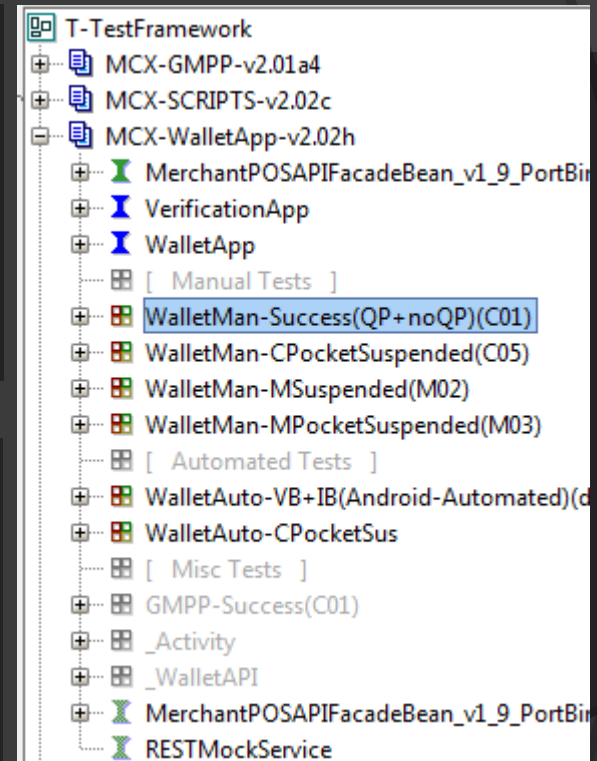
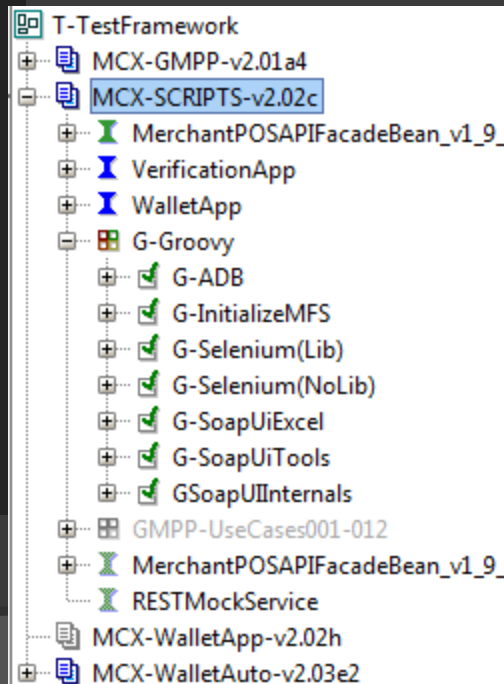
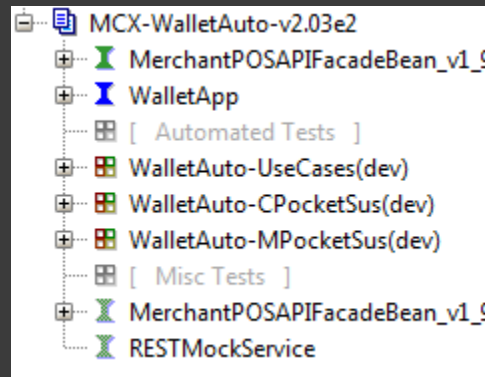
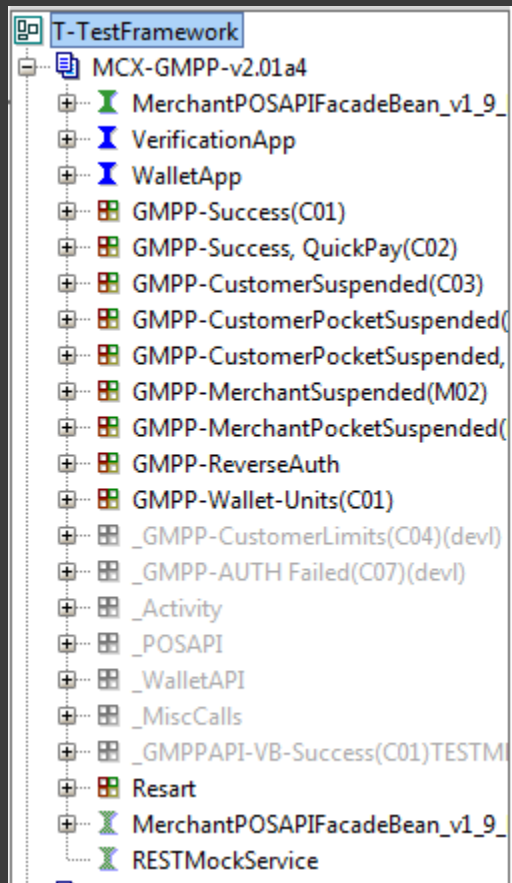
[illegible]

4 Projects Currently



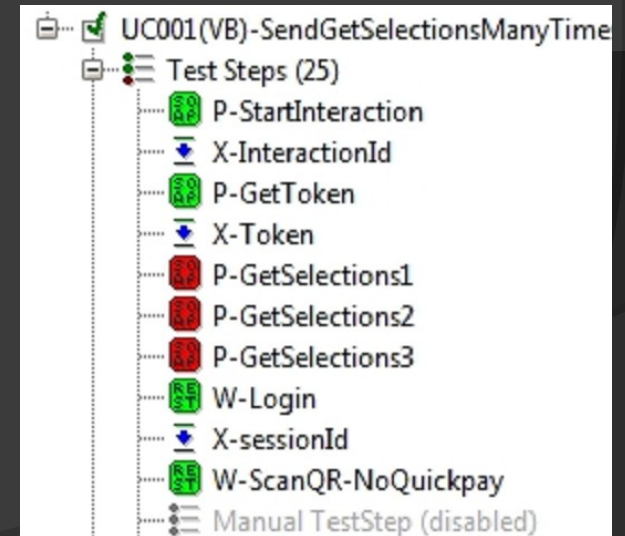
- GMPP API
- Wallet Manual (MFS Config & Prompts)
- Wallet Automated (GMPP, Android)
- Script Library
 - Just 'Groovy Script Test Steps' with either:
 - Call to the Groovy Library or...
 - Have code snippets

Split Products to 3 + Groovy Lib



Standard Step Prefixes

- P – POS API
- W – Wallet API
- G – Groovy Script Test Step
- D – Delay
- X – Property Transfer
- M – Manual Test Step



Let's see it in action!!!

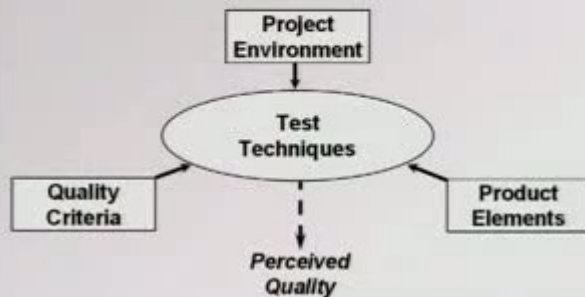


Other Viewpoints

- Automation is just ONE part of test effort.
- Manual testing normally finds more bugs – Automation great for regression
- At every point in the life cycle, we must compare the present quality of the product against the cost and value of further improvement

Other Viewpoints

All Product Testing is Something Like This



Thirty-Six Testing Heuristics

"cidtestdsfdpotcrusspicstmpldfsfscura"

Customers	Structures	Capability	Function testing
Information	Functions	Reliability	Domain testing
Developer relations	Data	Usability	Stress testing
Team	Platforms	Security	Flow testing
Equipment & tools	Operations	Scalability	Scenario testing
Schedule	Time	Performance	Claims testing
Test Items		Installability	User testing
Deliverables		Compatibility	Risk testing
		Supportability	Automatic testing
		Testability	
		Maintainability	
		Portability	
		Localizability	

What's Special About Testing

- There are few people around to teach you how to test.
- Most of what is taught as "testing" is unreliable or misleading folklore.
- Testing is a complex problem-solving activity
- Learning testing on your own doesn't cost you much, you don't need anyone's permission, and it generally poses no threat to life or property.

However...

- It's hard to know if you are doing it well.
- Good testing varies quite a lot with the context.

Typical Automation Formula

1. Purchase an expensive GUI test execution tool. (see Rational, Mercury, Compuware, etc.)
2. Define a lot of paper test procedures.
3. Hire an automation team to automate each one.
4. Build a comprehensive test library and framework.
5. Keep fixing it.

This can work if your product is *very easy to test and it doesn't change much*. Does that describe your product?

Other Viewpoints

Snap Out of It!

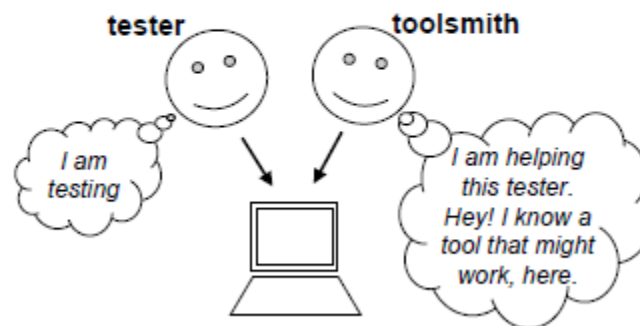
Why think so *narrowly* about test automation?

Consider thinking of test automation as...

any use of tools to support testing

Agile test automation is the application of *agile development principles* to the test automation problem.

This is what it looks like...



Principles of Agile Test Automation

- Test automation means tool support for all aspects of a test project, not just test execution.
- Test automation progresses when supported by dedicated programmers (toolsmiths).
- Toolsmiths are directed by testers.
- Test toolsmiths gather and apply a wide variety of tools to support testing.
- Test toolsmiths advocate for testability features and produce tools that exploit those features.
- Test automation is organized to fulfill short term goals.
- Long term test automation tasks are avoided in the absence of specific approval based on a compelling business case.

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Other Viewpoints

Tool-Supported Testing

- **Test generation (data and script generators).** Tools might create specialized data such as randomized email messages, or populate databases, or generate combinations of parameters that we'd like to cover with our tests.
- **System configuration.** Tools might preserve or reproduce system parameters, set systems to a particular state, or create or restore "ghosted" disk drives.
- **Simulators.** Tools might simulate sub-systems or environmental conditions that are not available (or not yet available) for testing, or are too expensive to provide live on demand.
- **Test execution (harnesses and test scripts).** Tools might operate the software itself, either simulating a user working through the GUI, or bypassing the GUI and using an alternative testable interface.
- **Probes.** Tools might make visible what would otherwise be invisible to humans. They might statically analyze a product, parse a log file, or monitor system parameters.
- **Oracles.** An oracle is any mechanism by which we detect failure or success. Tools might automatically detect certain kinds of error conditions in a product.
- **Activity recording & coverage analysis.** Tools might watch testing as it happens and retrospectively report what was and was not tested. They might record actions for later replay in other tests.
- **Test management.** Tools might record test results; organize test ideas or metrics.

Test tools are all over the place.

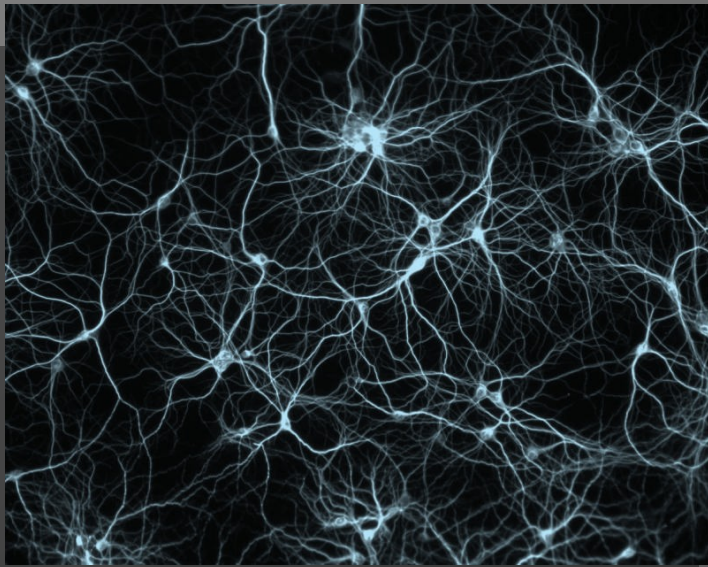
- **MSDN Universal Library**
- **Any Microsoft development tool** (they always include useful utilities)
- **Microsoft compatibility toolkit** and other free tools (www.microsoft.com)
- **Web-based web testing resources** (HTML checkers, accessibility analyzers)
- **Windows Resource Kits** (available from Microsoft)
- **Scripting languages** (e.g. Perl, Ruby, TCL) and associated libraries
- **Shareware repositories** (www.download.com)
- **O/S monitoring tools** (www.sysinternals.com)
- **Open source testware** (www.opensourcetesting.org)
- **Spyware for monitoring exploratory tests** (www.spractorsoft.com)
- **The cubicle next door...** (someone else in your company has a tool for you)

Tasks of the Toolsmith

- Respond rapidly to requests for assistance from testers.
- Seek out test productivity problems.
- Investigate possible solutions in concert with testers.
- Apply technology to improve the test process.
- Advocate for specific testability features in products.
- Research available tools and learn how to use them.
- Gather tools that developers or testers produce.
- Review upcoming product plans to assess automation possibilities.

Questions a Tester Might Ask a Toolsmith

- How do I test this new thing?
- How can I see what's happening inside the product?
- How do I know if this test passed or failed?
- Is there a way I can automatically perform this operation?
- Is there a way to make this bug easier to reproduce?
- Help me investigate this bug.
- Here's a test I want to execute. Can you help me generate 1000 variations of it?
- How well have I covered this product?
- I want to stress test this product. Are there any tools that do that?



Thanks for your time!

Introductory Prototype

GGs TEST FRAMEWORK