

IBM Innovate 2010

QM-1992A

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Innovate2010

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Why We Chose Rational Functional Tester for Automated Testing

- About LPS
 - ▶ Each of the 50 top financial institutions in the country uses at least one of LPS' products and/or services
- LPS Desktop POC
 - ▶ Tool Requirements
 - ▶ Critical Design Choices and their impacts
- Recommendation
 - ▶ Project Organization



LPS Desktop POC

Criteria for Success

- Reliability
- Maintainability
- Speed

Project Details

- Large test bed ~ 16,000 test cases
- Complexity
- Maturity



Criteria	Rank (1 to 3, with 3 being best)		
	HP QuickTest Professional	IBM Rational Functional Tester	MS Visual Studio 2008
Area			
Requirements			
Record and Playback	2	3	1
Integration with Other Tools	2	3	1
Language of Tool	1	3	2
Domain Support	2	3	0
Stability of Tool	2	3	1
Object Map Files	2	3	0
Use of Dynamic Finds	1	3	0
POC Results/Compatibility with AUT			
Ease of Scripting	2	3	0
Ease of Maintenance/Reusability	2	3	0
LOE to Automate	2	3	0
Speed/Performance of Tool	3	2	0
Support			
External Support (Updates/Service Packs)	2	2	1
Reporting			
Reporting and Metrics	3	2	0
Longevity and Market Share			
Maturity/Longevity	2	2	0
QA Software Market Share	3	2	0
Resource Experience			
Ramp Time	2	3	0
Price			
Perpetual License + 1yr Support	2	3	0
Test Lab Manager	0	2	0
SaaS Offering	2	0	0
TOTALS	37	48	6
RANK	2	1	NA

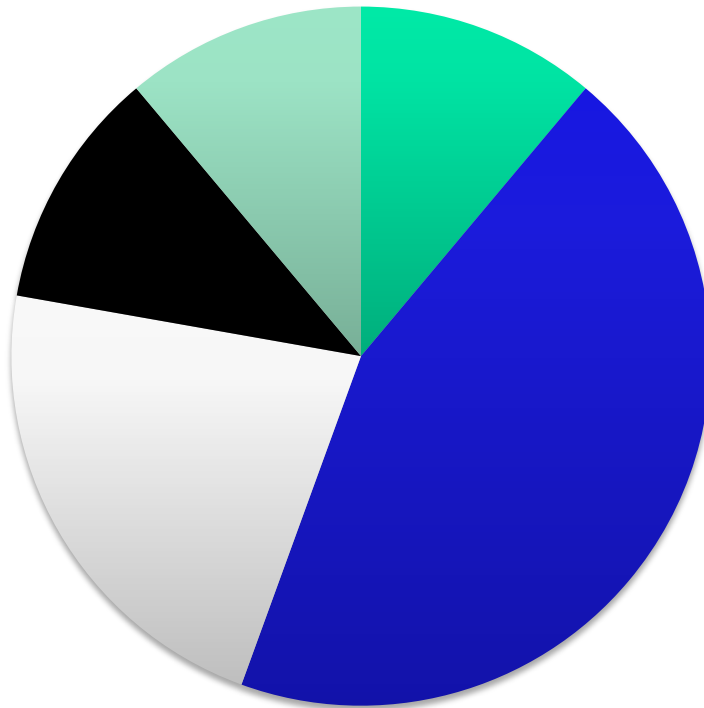
Critical Feature – Technology Support

Technology		QTP	RFT	VS 2010	Selenium
Custom Controls		Yes	Yes	Yes	Web Only
Windows	Windows Forms	Yes	Yes	Yes	No
	WPF	Yes	Yes	Yes	No
	Win32	Yes	Yes	Best efforts with known issues	No
	MFC	Yes	Yes	Best efforts with known issues	No
Web	Html	Yes	Yes	Yes	Yes
	Ajax	Yes	Yes	Yes: IE 7/8, Limited: FF3	Yes
	Silverlight	Yes*	No	No	Yes*
	Flex	Yes*	Yes	No	Yes*
	Flash	Yes*	No	No	Yes*
	Dojo	Yes*	Yes	No	Yes*
	GWT	Yes*	Yes	No	Yes*
	Web Services	Yes*	Yes	Yes	Yes
Other	Java	Yes*	Yes	No	No
	.Net	Yes*	Yes	No	No
	VB	Yes*	Yes	No	No
	SAP	Yes*	Yes	No	No
	Siebel	Yes*	Yes	No	No
	Sybase	Yes*	No	No	No
	Powerbuilder	Yes*	Yes	No	No
	Terminal-based	Yes*	Yes*	No	No
	Oracle	Yes*	Yes	No	No
	PeopleSoft	Yes*	No	No	No

Critical Feature - Audience

- What audience is the tool intended?
- Implications

Test Bed



- test cases that any tool can automate
- test cases that require addition of logic
- test cases that require usage of 3rd Party APIs
- test cases that ROI is not worth the effort
- test cases that are not possible to automate



Critical Feature- Language

- Language
 - ▶ Flexibility
 - How flexible is the language?
 - How flexible is the tool's API
 - ▶ 3rd Party APIs
 - ▶ Version support (evolving or in maintenance mode)
- Summary by Tool
 - ▶ QTP uses VBScript
 - ▶ VS can be used in c# or VB.net
 - ▶ RFT can be used in Java or VB.net



Critical Design Choices - IDE

- An **integrated development environment (IDE)** is a software application that provides comprehensive facilities to computer programmers for software development.
- An IDE normally consists of:
 - ▶ A source code editor
 - Auto-Complete, Code Assist
 - Navigation (outline, breadcrumbs)
 - ▶ A compiler and/or an interpreter
 - ▶ Build automation tools
 - ▶ A debugger
 - Breakpoints, Call stack, expressions, watch variables
 - ▶ Source Control
 - ▶ Add-ins / Plug-ins



Critical Design Choices - IDE

- Summary by Tool
 - ▶ QTP is built on a proprietary IDE
 - Many limitations
 - Only one script can be open at a time along with an unlimited number of function library files
 - Spy window is a pop-up dialog that blocks all other input
 - Auto-complete scope is limited to only the built-in QTP functions
 - Code base navigation abilities are severely lacking
 - Missing refactoring capabilities
 - Syntax checker is poor; many errors not reported until runtime
 - Limited support for documentation of code base
 - ▶ RFT –
 - In Java mode Eclipse is used
 - In VB.net mode Visual Studio is used



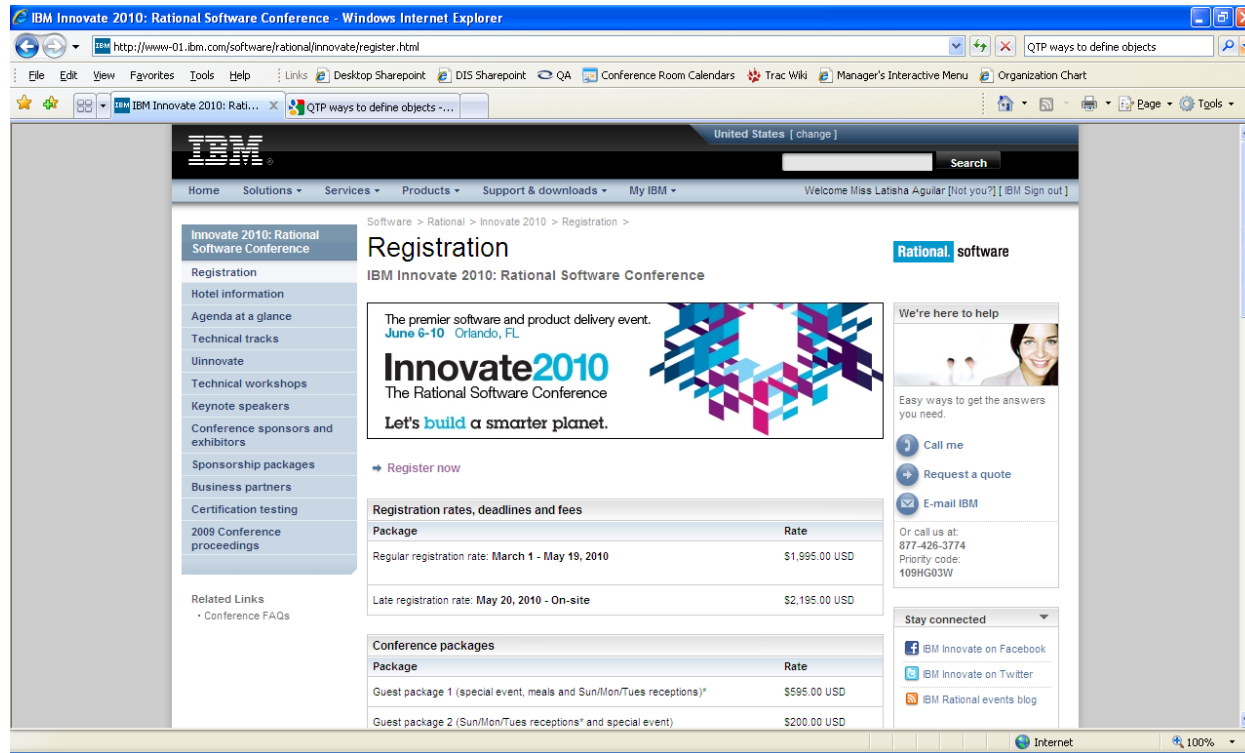
Critical Design Choices – Test Object Management

There are two methods to find AUT controls

- Without a Map
 - According to IBM help pages “The search is based on name/value pairs representing properties of the TestObject or TestObjects you are looking for. The search can either be global, or limited to children of a parent TestObject”
 - QTP’s variant is called descriptive programming and it has limitations
 - Hard to control find scope – all or nothing
- Map



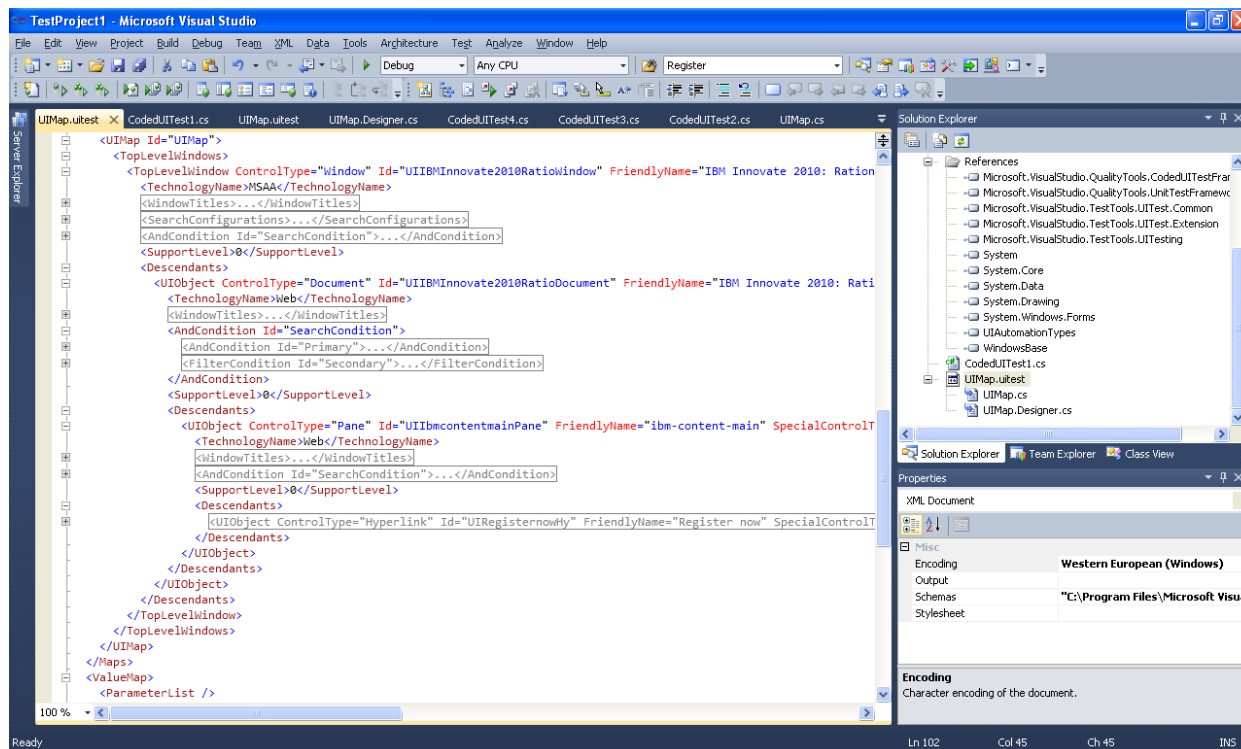
Critical Design Choices – Test Object Management



Suppose we want to find the “Register Now” link

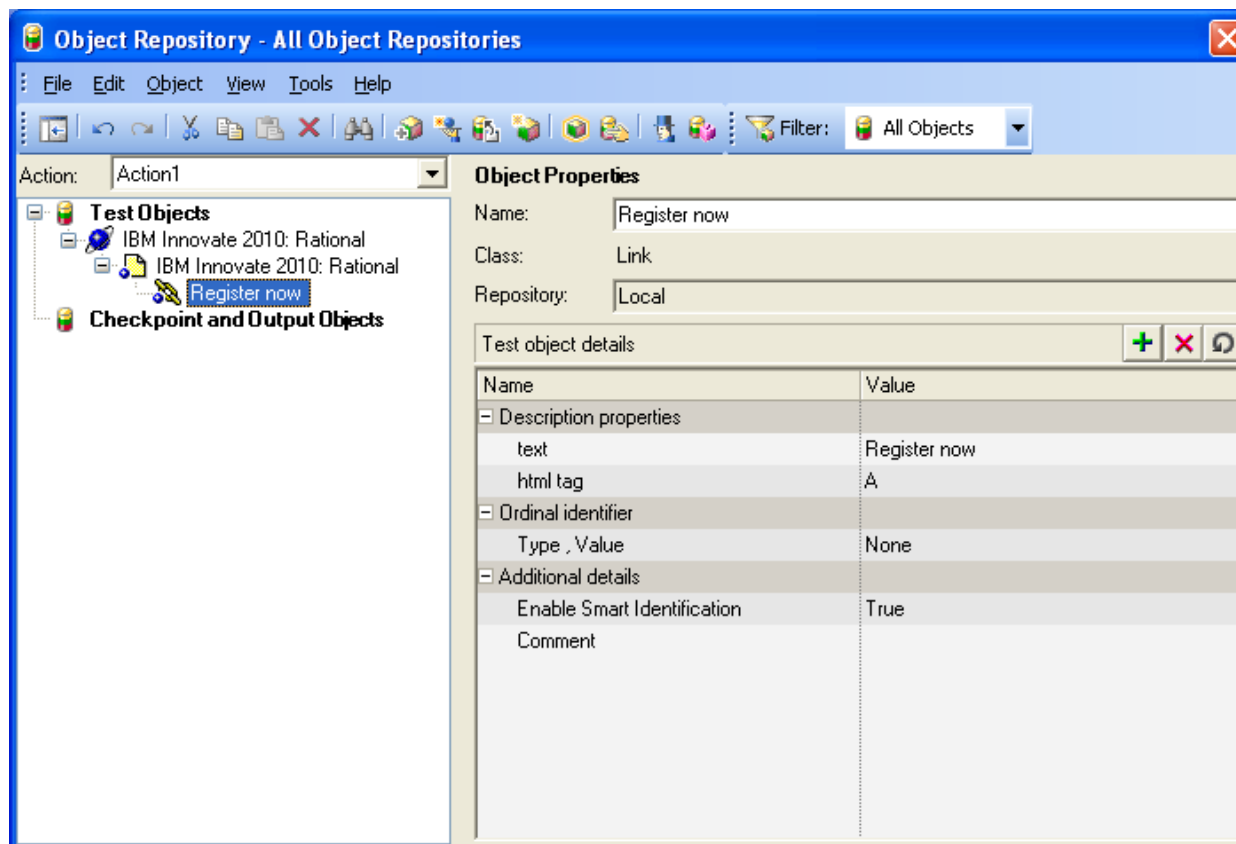
Critical Design Choices – Test Object Management

HtmlHyperlink uiRegistrernowHyperlink =
this.UIIGoogleWindowsInternWindow.UIIBMInnovate2010RatioDocument.UIIbmcontentmainPane.UIRegistrernowHyperlink;



Object Definitions in VS 2010

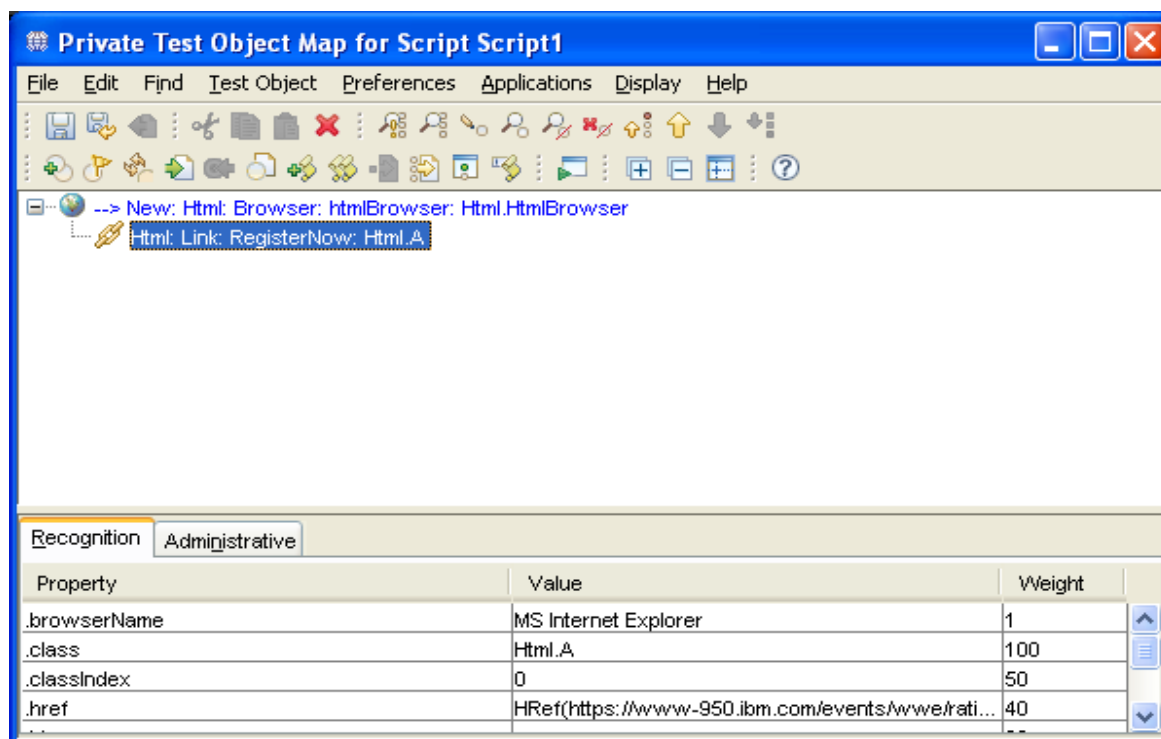
Critical Design Choice – Test Object Management



Object Repository in QTP

Critical Design Choices – Test Object Management

- ▶ Dynamic Test Object feature removes the parent hierarchy from object definition. End result is cleaner maps with fewer test objects to maintain



Maintenance Tip: Associate as few properties as possible with each test object. The more test objects in the map the higher likelihood of something breaking.

Test Object Map in RFT

Recommendation: Project Organization

Tip: Maximize code reuse, separate AUT code from Common code

Use Two Projects

1. Common project
2. AUT project



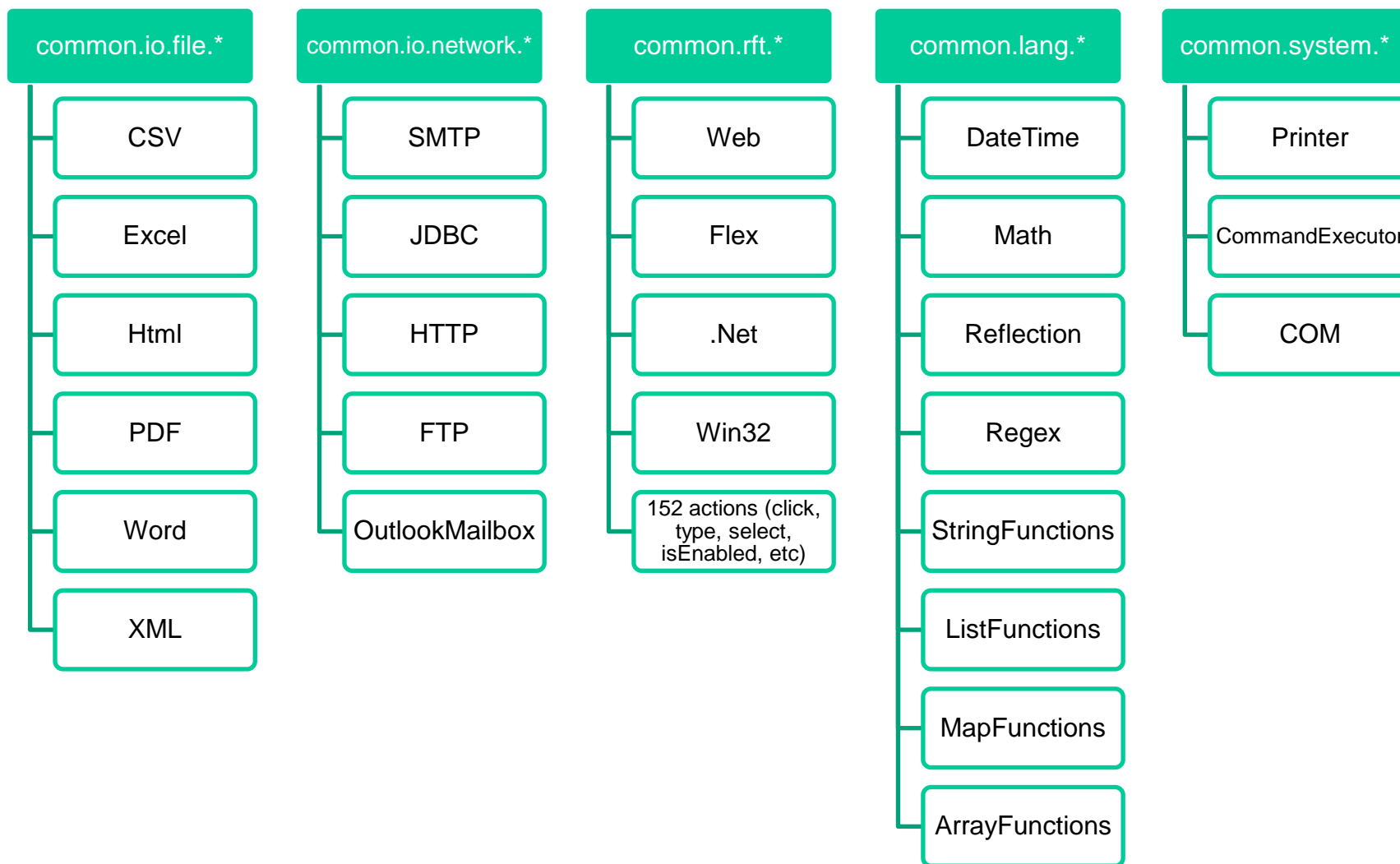
Recommendation - Project Organization - Common

Common's purpose is to ensure that repeated activities are done once and properly.

- What do we mean by properly?
 - Thorough exception handling, flexible logging, and consistent return types
- Why is it needed?
 - Avoid writing boilerplate code
 - Keep engineer's focus on what provides value
 - Offers a consistent and reliable foundation for AUT library
- Why is it worth the effort?
 - Can be reused across projects and organizations
- ▶ LPS usage of common
 - spans two organizations and 14+ projects
 - the application domains were mix of Html, Flex, .Net, Win32
 - Libraries used Sun JRE 6, Apache Projects, RFT API



Snapshot of LPS' popular common packages



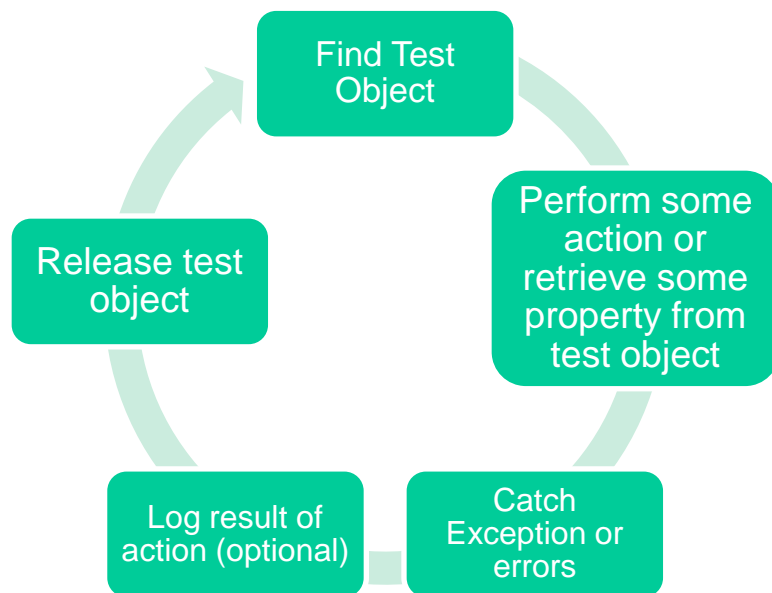
Recommendation - Project Organization - AUT

- **AUT Library** purpose is to build a model of the user interface. Typically one java class per screen or wizard
 - ▶ Key Objectives
 - Combine actions from Common into keywords (methods) that represent business components or workflow
 - Define AUT Objects

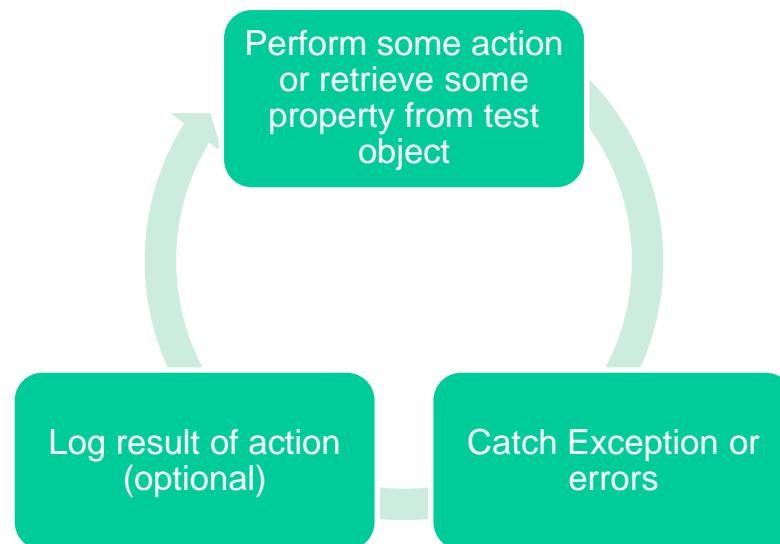
- **AUT Workflow:** purpose is to assemble keywords into a single test scenario (Functional Test Script).
 - ▶ Key Objectives
 - Define the data that should be used (environment, login information, etc)
 - Call the appropriate keywords to build a work flow
 - Log the test scenario execution



Recommendation - Test Object Usage



Dynamic Find



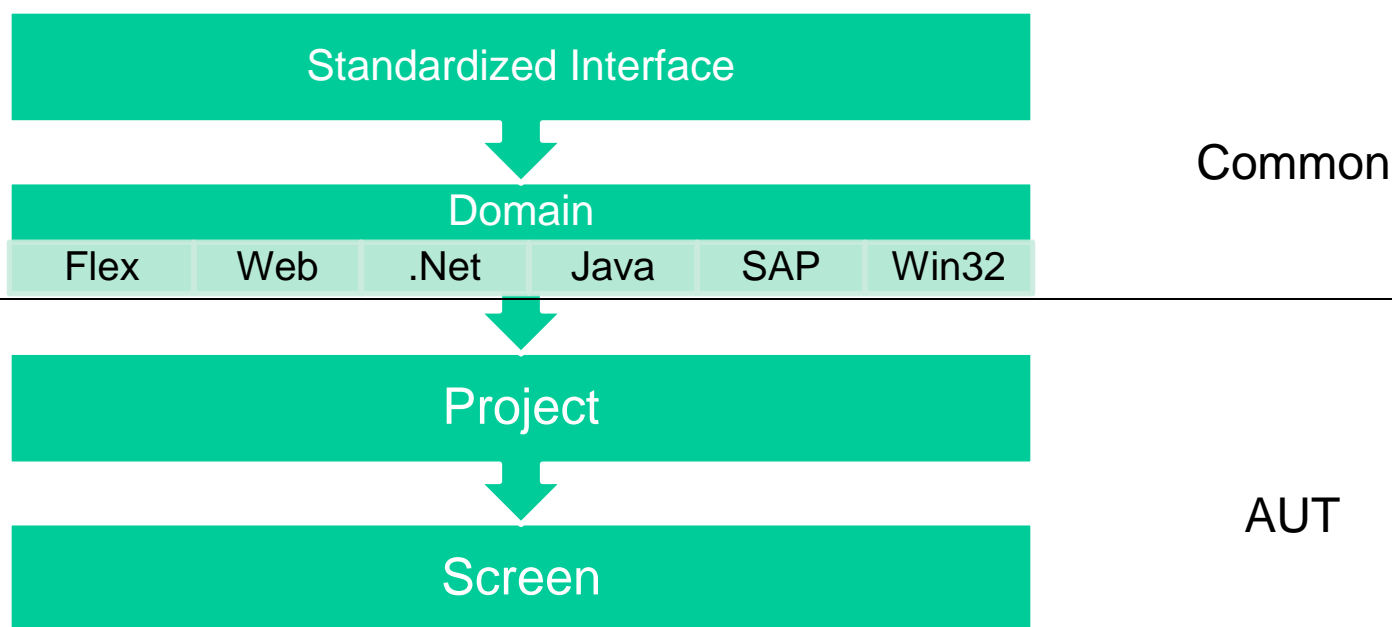
Find handled by Object Map

- ▶ Reliability Tip: Increase stability and reduce memory leaks by wrapping up the entire find, act, and release cycle for common actions.



Recommendation - Project Organization: Test Object Actions

Tip: Layering provides consistency in actions

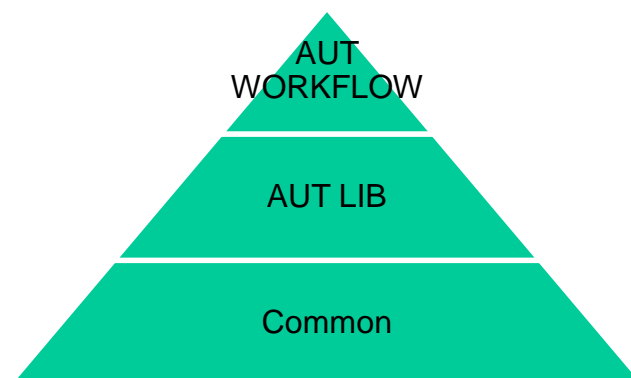


Recommendation - Project Organization

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Use Two Projects

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Questions



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