Creating an Automated Software Testing Center of Excellence

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Agenda:

- About IDT
- Selected best practices in an Automated Testing Center of Excellence
- Demo
- Q&A
- Closing Notes

About IDT

- Information technology business headquartered in Arlington, Virginia

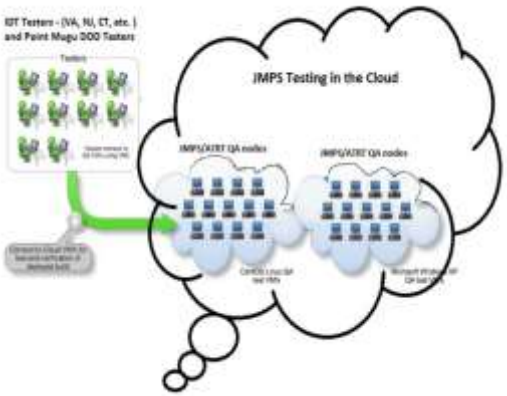
  Our primary objective is to enable new software capabilities to be deployed with higher quality, faster and more affordably.

- We provide:
  - Integrated automated testing solution – Automated Test and Re-test (ATRT) – also DOD approved
  - Automated testing strategies
  - Help improve your test program
  - ATRT Solutions Training
  - Other ATRT related services
- For more about IDT go to www.idtus.com

Automated Software Testing Center of Excellence

Virtualized Environment

Systems of Systems Testing: GUI and message based automated testing combined



Use Virtual Environments

Use Efficient Automated Testing Solutions

Automated Test Solutions

Handle systems of systems environment

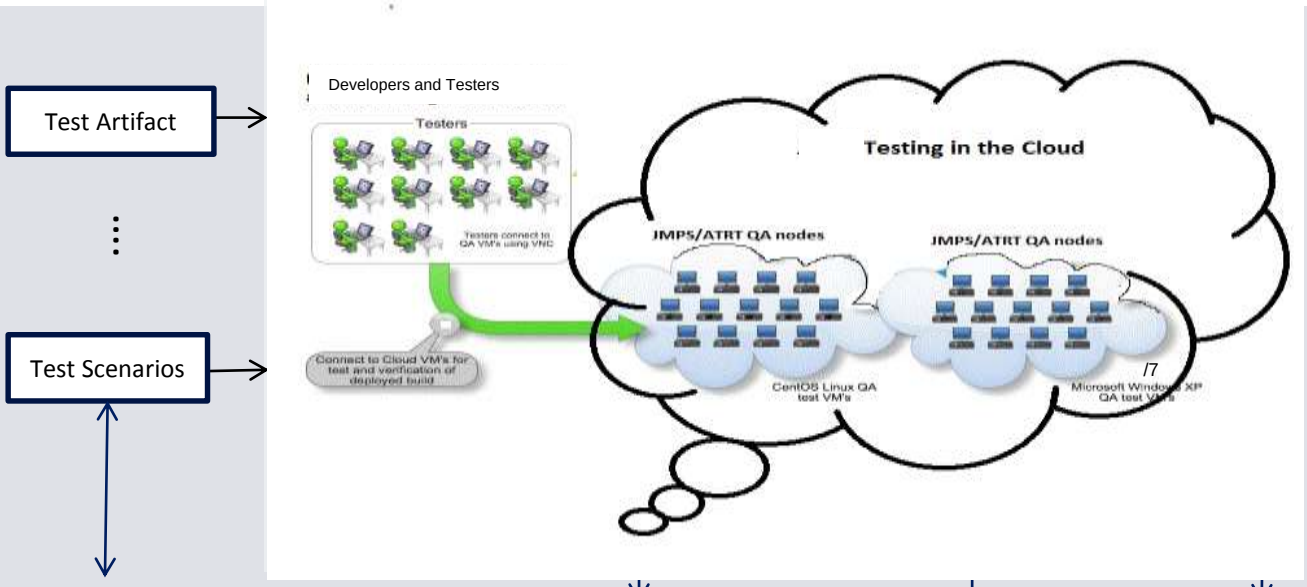
Automated Test Solutions

- ***Handle systems of systems environments***

ATRT's solution:

- ATRT can handle distributed and concurrent testing over a network: Automated tests can be executed concurrently over a network for the test case where various GUI- or message-based outputs are dependent on each other over a network or have to run in parallel.

ATRT Solutions (cont)



ATRT Product Suite

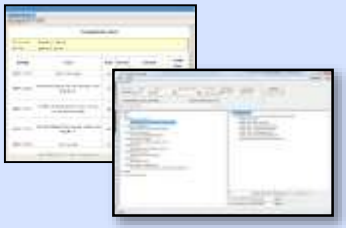
Test Dashboard

- Test Planning
- Dynamic Test Configuration
- Req. Coverage/Perf. Metrics
- Trend Analysis

Test Manager

- Test Conduct / Scenario Cntl.
- Message Gen.& Receive
- GUI Capture and Playback

Analysis Manager



- Event Reconstruction
- Requirements Verification
- Performance Analysis

Information Security Manager

- Security Gap Remediation
- Reporting/Metrics
- Performance Analysis

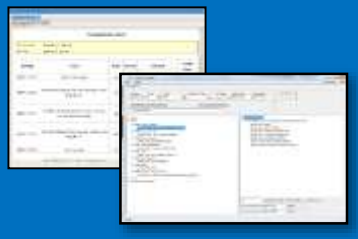
ATRT Solutions: Understanding your testing problem before choosing a tool

- Unit testing and code coverage
- Functional GUI testing
- Data Analysis
- Information Assurance
- Performance Testing
- Others, such as security testing, etc.

Test Manager

- Test Execution / Scenario Control
- Message Generation and Receive
- GUI Capture and Playback

Analysis Manager



- Event Reconstruction
- Requirements Verification
- Performance Analysis

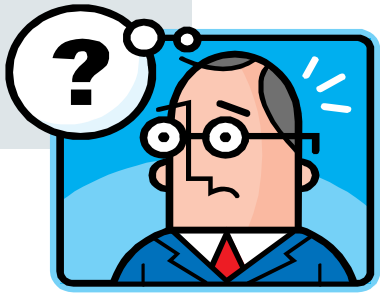
Information Security Manager

- Network IA testing/patch management

ATRT Solutions: Keep it simple

- Testers often are subject matter experts but not necessarily software developers who could use an automated testing tool efficiently.
- Non-developers generally don't want to be bothered with developing automated testing scripts; they want to be able to use the tool with the simple click of a button.
- Organizations don't want their expensive developer staff spending time developing automated test cases when they can develop features
- If tool is not usable it can become shelfware

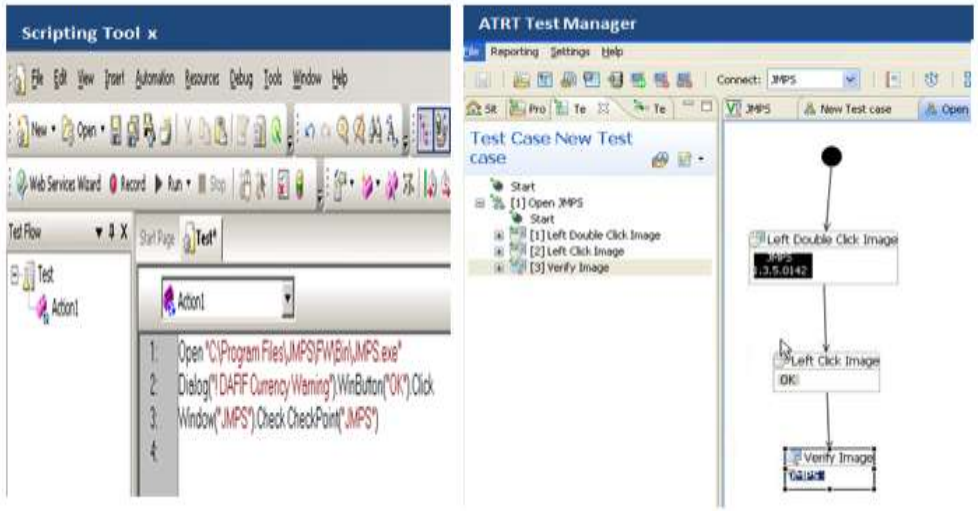
Your Automated Testing Effort can't become another Development Effort



ATRT Solutions: Scriptless Automation

ATRT's solution:

- Image based approach to developing automated testing.
  - Allows the testers to drag the action they want to take on a “canvas” to develop their automated tests in a test flow form
- No scripting is involved



ATRT Solutions:

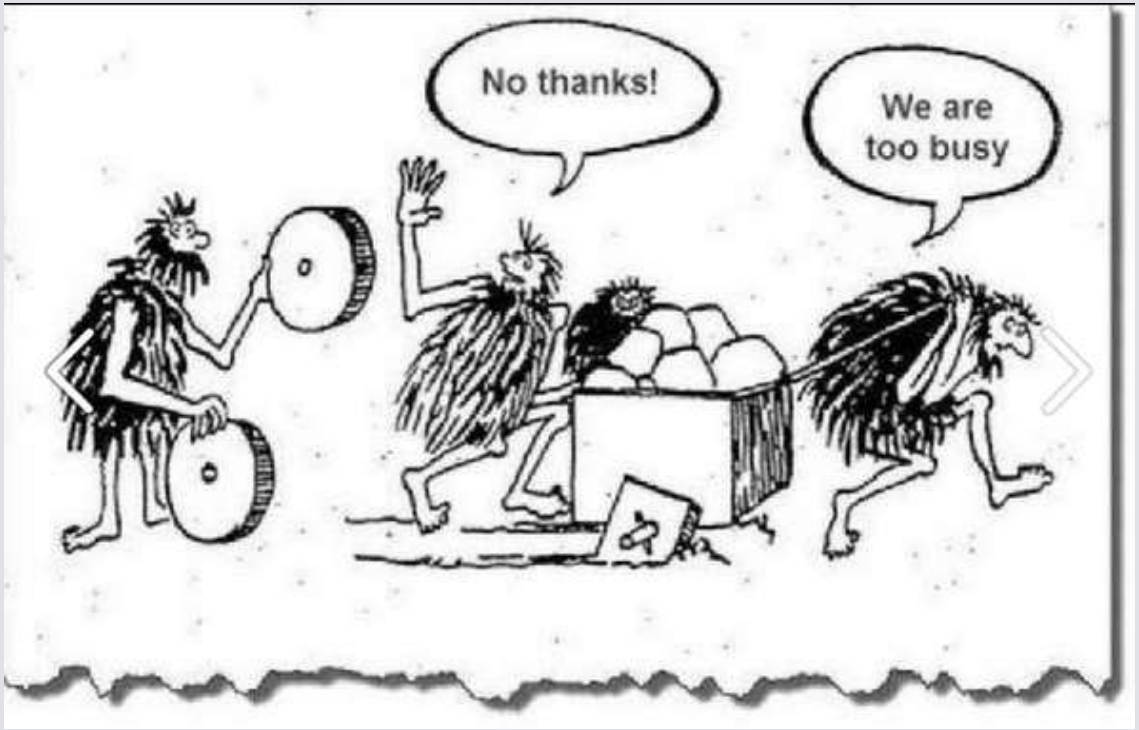
OS and Platform independence: Since various VNC or RDP versions exist for most OSs, ATRT meets the “OS independent” requirement

GUI technology independence: Via VNC and RDP we can interact with all GUI elements of the SUT as images, independent of the GUI technology used.

Handles display and non-display centric automation (ATRT currently supports different protocols such as TCP/IP, User Datagram Protocol [UDP], Common Object Request Broker Architecture [CORBA], DDS, SOAP over http.)

Implementing the Automated Test Program

Implementing the Automated Testing Program



There is never time

Implementing the Automated Test Program

- Start with a pilot that lends itself to automation
- Assess lessons learned
- Assess ROI
- Make “moving forward” decision

DEFINE AUTOMATED TESTING STRATEGY

Roles and Responsibilities

- **Dedicated Resources**
  - Don’t treat as side activity
  - Divide and conquer: Each person owns a feature’s automated tests (familiarization) and is responsible for maintaining across build releases
  - Section Lead responsible for Common Functions.
    - Leads are experienced capturers that enforce best practices
- **Understand and communicate best practices specific to tool**
- **Unit Testing**
  - Use unit testing tool such as junit or nunit
  - Executed nightly along with functional automated tests

AST TEST DESIGN

Test Design

Strategic

- **Not everything needs to be automated**
- Reuse, reuse, reuse
- Assistive tool approach
- Detailed automation plan

Analyze procedures to determine best candidates for automation.

Test Design

Strategic

- **Reuse, reuse, reuse**
- Not everything needs to be automated
- Assistive tool approach
- Detailed automation plan

Designing tests for maintenance is a large portion of any automation effort.

Test Design

Strategic

- Reuse, reuse, reuse
- Not everything needs to be automated
- **Assistive tool approach**
- Detailed automation plan

If a procedure is not well-suited for automation as a whole, consider using ATRT-TM as an assistive tool for redundant / tedious sections.

(It's not an "all or nothing" approach.)

Test Design

Strategic

- Reuse, reuse, reuse
- Not everything needs to be automated
- Assistive tool approach
- **Detailed automation plan**

Separate problems of automation approach from challenges of learning tools such as ATRT TM.

Test Design

Tactical

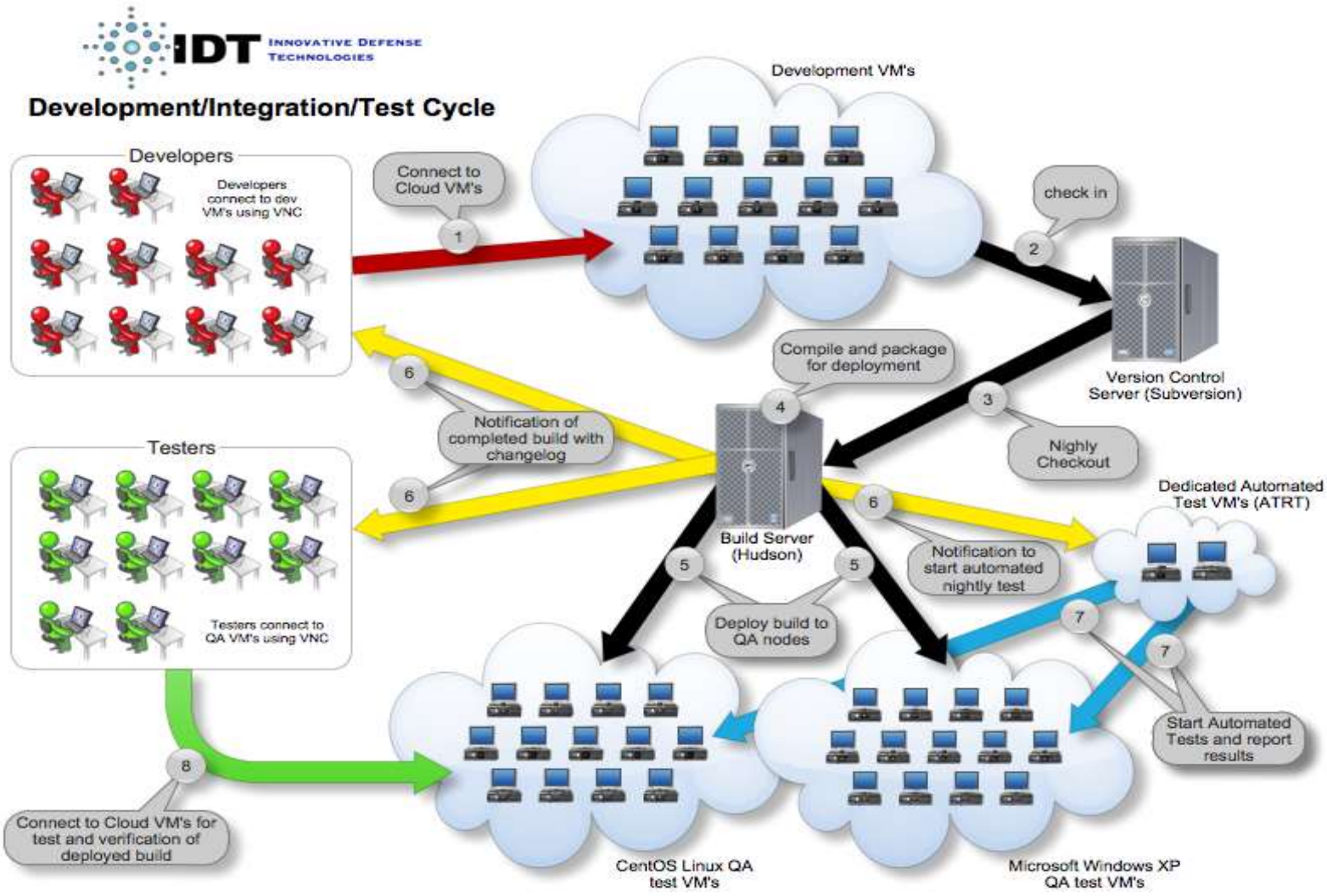
- Start and Stop States
- Keeping it modular
- Use Naming Conventions
  - **SUBSYSTEM_verb[Adjective]Noun** - optional values are in brackets

Use Source Control

Continuous Integration

CONTINUOUS AUTOMATED TESTING – INTEGRATED WITH DEVELOPMENT

Continuous Integration Setup Example



Automated Testing Center of Excellence

Contact us at
edustin@idtus.com

IDT
INNOVATIVE
DEFENSE TECHNOLOGIES

Q&A

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Summary

- Scriptless, technology agnostic and easy of maintenance are important solutions to the automated testing challenge
- Our goal with ATRT is to provide solutions to these challenges
- Please go to our website **http://idtus.com/products/atrt-test-manager/**
  - For evaluation copies
  - Access to our customer portal (training videos, etc.)
  - For training requests
  - Other inquiries
- We do provide additional training
- Send email to **edustin@idtus.com** for other questions