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## Application Testing Automation

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# Agenda

- > What is an application testing (AT) ?
- > Reality and Challenges
- > Goals and Fantasy
- > Demonstration
- > Summary
- > Q&A

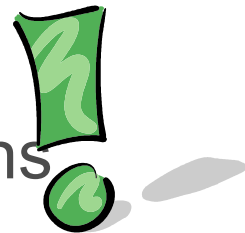
# What is Application Testing?

- > Application Testing (AT) is:
  - > - Platform testing by real-life applications
  - > - Essential and important for emulator and mobile device testing
  - > - *NOT* validation of applications
- > AT Goals:
  - > - Smoke testing
  - > - Quick detection of regressions
  - > - Detailed verification that the application works correctly (functional testing)



# AT Reality

- > Need to use a wide range of real-life applications:
  - > - Developed by third-party companies
  - > - Delivered in binary form (JAD, JAR files) without:
    - > - Source code
    - > - Test scenarios
  - > - An application is not a pure test
- > All test steps done manually, including:
  - > - Deployment and execution of applications
  - > - Creation of reports



# AT Challenges

- > Formalize the test process
  - > - Define a set of applications
  - > - Specify the test scenarios
  - > - Deploy applications
  - > - Execute test scenarios
- > Obtain useful execution reports
  - > - Define a uniform format
  - > - Difficult to create and analyze reports



# AT Goals

- > A well organized AT process:
  - > - Works with real-life applications in a standard test environment which allows us to:
    - > - Establish the set of applications to be
    - > included in the test suite
    - > - Download and execute applications
    - > - Provide on-screen test instructions
    - > - Get standard test harness reports
  - > - Collects and analyzes the statistical data
  - > - Creates uniform summary reports



# Our Fantasy

- > To be able to automatically:
  - > - Deploy applications
  - > - Execute application test scenarios
  - > - Generate various reports
- >
- > *Demo:*
  - > - *Run applications automatically on device*



# Our Solution for Application Testing

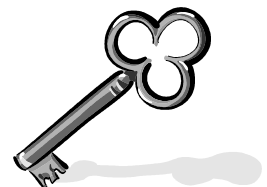
- > Apply:
  - > - The test framework
  - > - Test pack generation tool
  - > - The automated execution tool
  - > - The report generation tool

>

>

>

>





# Test Framework

- > The JDTF (Java™ Device Test Framework):
  - > - Wraps applications into tests
    - > - As in the Over The Air (OTA) tests
  - > - Creates standard test packs
    - > - For any set of applications
  - > - Deploys applications
    - > - From a single framework server URL
  - > - Executes applications
    - > - With step-by-step instructions
  - > - Gets standard framework reports

JT Harness: Java Device Test Framework: C:\J1\_W

File Configure Run Tests Report View Tools Window

View Filter: Status of All Tests Edit F

Test Suite Root

- Java\_ME\_SDK\_3\_0\_Applications\_OTATestPack
  - com
    - sun
      - applications
        - sdk
          - me
            - blueray#BdjGunBunny
            - clde#FPDemo
            - jsr075#PDAPDemo
            - jsr082#BluetoothDemo
            - jsr120#VMADemo
            - jsr135#AudioDemo
            - jsr135#MMAPIDemos
            - jsr135#Multimedia
            - jsr172#JSR172Demo
            - jsr177#SATSDemos
            - jsr177#SATSAJCRMIDemo
            - jsr179#CityGuide
            - jsr180#SIPDemo
            - jsr184#Demo3D
            - jsr209#AGUIJava2DDemo
            - jsr209#AGUISwingSet2
            - jsr211#CHAPIDemo
            - jsr226#SVGContactList
            - jsr226#SVGDemo
            - jsr229#JBricks
            - jsr234#AdvancedMultimediaSu
            - jsr238#H18nDemo
            - jsr256#Sensors
            - jsr280#XMLAPIDemo
            - lwuit#LVUITDemo
            - midp#Demos
            - midp#Games
            - midp#NetworkDemo
            - midp#PhotoAlbum
            - midp#UIDemo

New\_Set\_of\_FX\_Applications\_OTATestPack

Work Directory: jdtswkDir

Java Device Test Framework

DefaultFXPhone1 (ID: 8)

Application View Help

Phone number: 123456789

Test Evaluation: Java\_ME\_SDK\_3\_0\_Applications\_OTATestPack/com/sun/appl...

Test Name	jsr226.SVGDemo
Test Objectives	Verify the ability to correctly launch and run the SVGDemo.
User Interaction	<ol style="list-style-type: none"> <li>1. Install MIDlet suite <b>SVGDemo.jad</b> from: &lt;Test URL&gt;</li> <li>2. Select the MIDlet <b>Render SVG Image</b> and launch it.</li> <li>3. Verify the correct Duke image</li> <li>4. Select the MIDlet <b>Play SVG Animation</b> and launch it.</li> <li>5. verify the correct animation (no artifacts on screen, no pauses, etc)</li> <li>6. Select the MIDlet <b>Bouncing Balls</b> and launch it.</li> <li>7. Verify the correct work of application (no artifacts on screen, no pauses, etc)</li> <li>8. Remove the installed MIDlet.</li> </ol>
Test Expected Result	There is no unexpected behavior during the user interactions.
Comments	None

Test URL: <http://Home:8080/JdtsServer/ota/html/1/ota.html>

Comments:

Functionality: Secondary Impact: Significant Severity: 3 - Medium

Passed Failed

JT Harness: Java Device Test Framework: C:\J1\_WORK\_DIR\J1QForge\reports\Java\_ME\_SDK\windows\builds\_or\_test\_cycles\b\_04\demo\Java\_ME\_SDK\_3\_0\_Applications\_OTATestPack\jd...

File Configure Run Tests Report View Tools Windows Help

View Filter: Status of All Tests Edit Filter...

Test Suite Root

- Java\_ME\_SDK\_3\_0\_Applications\_OTATestPack
  - com
    - sun
      - applications
        - sdk
          - me
            - blueray#BdjGunBunny
            - clcdc#FPDemo
            - jsr075#PDAPDemo
            - jsr082#BluetoothDemo
            - jsr120#VMDemo
            - jsr135#AudioDemo
            - jsr135#MMAPIDemos
            - jsr135#Multimedia
            - jsr172#JSR172Demo
            - jsr177#SATSADemos
            - jsr177#SATSAJCRMIDemo
            - jsr179#CityGuide
            - jsr180#SIPDemo
            - jsr184#Demo3D
            - jsr209#AGUIJava2DDemo
            - jsr209#AGUISwingSet2
            - jsr211#CHAPIDemo
            - jsr226#SVGContactList
            - jsr226#SVGDemo
            - jsr229#JBricks
            - jsr234#AdvancedMultimediaSupplements
            - jsr238#I18nDemo
            - jsr256#Sensors
            - jsr280#XMLAPIDemo
            - lwuit#LWUITDemo
            - midp#Demos
            - midp#Games
            - midp#NetworkDemo
            - midp#PhotoAlbum
            - midp#UIDemo

Folder: Java\_ME\_SDK\_3\_0\_Applications\_OTATestPack

Summary Documentation Passed Failed Error Not Run Filtered Out

Selected Folder: Java\_ME\_SDK\_3\_0\_Applications\_OTATestPack  
Selected View Filter: All Tests  
Unfiltered view of the test suite and results in the work directory.

Passed	30
Failed	0
Error	0
Not Run	0
Sub-Total	30
Filtered Out	0
Total	30

All tests passed in this folder.

Work Directory: jdtsWorkDir Configuration: FX\_Applications.jti Template: all.jtm

Finished test run. Elapsed Time 00:01:04

Java Device Test Framework

Report Browser: C:\J1\_WORK\_DIR\sun\jdtf-ci\admin\report...

File

File:html\report.html

Help

## JT Harness : Report

TestSuite: Java Device Test Framework

- Configuration and Other Settings
  - Configuration
  - Standard Values
  - How to run the tests
  - Where to put the results:
- Results
- Statistics
  - Keyword Summary

### Configuration and Other Settings

Test suite
C:\J1\_WORK\_DIR\sun\jdtf-ci\admin\nts

#### Standard Values

Tests	Java ME SDK 3 0 Applications OTA TestPack
Prior Status	(Any Status - Pass, Fail, Error, Not Run)
Excluded Tests	(No entries or no exclude list specified)
concurrency	1
Timeout factor	1
Keywords	(No keywords specified)

#### How to run the tests

Configuration Log
FX Applications

Report Browser: C:\J1\_WORK\_DIR\sun\jdtf-ci\admin\report1\index.html

File

File:html\passed.html

Help

## JT Harness : Tests that passed

Tests are grouped by their final status message.

(no reason in status)

- Java ME SDK 3 0 Applications OTA TestPack\com\sun\applications\sdk\me\blueray#BdGunBunny : blueray\_BdGunBunny
- Java ME SDK 3 0 Applications OTA TestPack\com\sun\applications\sdk\me\cldc#FPDemo : cldc\_FPDemo
- Java ME SDK 3 0 Applications OTA TestPack\com\sun\applications\sdk\me\jsr075#PDAPDemo : jsr075\_PDAPDemo
- Java ME SDK 3 0 Applications OTA TestPack\com\sun\applications\sdk\me\jsr082#BluetoothDemo : jsr082\_BluetoothDemo
- Java ME SDK 3 0 Applications OTA TestPack\com\sun\applications\sdk\me\jsr120#WMAudioDemo : jsr120\_WMAudioDemo
- Java ME SDK 3 0 Applications OTA TestPack\com\sun\applications\sdk\me\jsr135#AudioDemo : jsr135\_AudioDemo
- Java ME SDK 3 0 Applications OTA TestPack\com\sun\applications\sdk\me\jsr135#MMAPI Demos : jsr135\_MMAPI Demos
- Java ME SDK 3 0 Applications OTA TestPack\com\sun\applications\sdk\me\jsr135#Multimedia : jsr135\_Multimedia
- Java ME SDK 3 0 Applications OTA TestPack\com\sun\applications\sdk\me\jsr172#JSR172Demo : jsr172\_JS172Demo
- Java ME SDK 3 0 Applications OTA TestPack\com\sun\applications\sdk\me\jsr177#SATSADemos : jsr177\_SATSADemos
- Java ME SDK 3 0 Applications OTA TestPack\com\sun\applications\sdk\me\jsr177#SATSAJCRMDemo : jsr177\_SATSAJCRMDemo
- Java ME SDK 3 0 Applications OTA TestPack\com\sun\applications\sdk\me\jsr179#CityGuide : jsr179\_CityGuide
- Java ME SDK 3 0 Applications OTA TestPack\com\sun\applications\sdk\me\jsr180#SIPDemo : jsr180\_SIPDemo
- Java ME SDK 3 0 Applications OTA TestPack\com\sun\applications\sdk\me\jsr184#Demo3D : jsr184\_Demo3D
- Java ME SDK 3 0 Applications OTA TestPack\com\sun\applications\sdk\me\jsr209#AGUIJava2DDemo : jsr209\_AGUIJava2DDemo
- Java ME SDK 3 0 Applications OTA TestPack\com\sun\applications\sdk\me\jsr209#AGUISwingSet2 : jsr209\_AGUISwingSet2
- Java ME SDK 3 0 Applications OTA TestPack\com\sun\applications\sdk\me\jsr211#CHAPIDemo : jsr211\_CHAPIDemo
- Java ME SDK 3 0 Applications OTA TestPack\com\sun\applications\sdk\me\jsr226#SVGContactList : jsr226\_SVGContactList
- Java ME SDK 3 0 Applications OTA TestPack\com\sun\applications\sdk\me\jsr226#SVGDemo : jsr226\_SVGDemo
- Java ME SDK 3 0 Applications OTA TestPack\com\sun\applications\sdk\me\jsr229#JBricks : jsr229\_JBricks
- Java ME SDK 3 0 Applications OTA TestPack\com\sun\applications\sdk\me\jsr234#AdvancedMultimediaSupplements : jsr234\_AdvancedMultimediaSupplements
- Java ME SDK 3 0 Applications OTA TestPack\com\sun\applications\sdk\me\jsr238#18nDemo : jsr238\_18nDemo
- Java ME SDK 3 0 Applications OTA TestPack\com\sun\applications\sdk\me\jsr256#Sensors : jsr256\_Sensors
- Java ME SDK 3 0 Applications OTA TestPack\com\sun\applications\sdk\me\jsr280#XMLAPIDemo : jsr280\_XMLAPIDemo
- Java ME SDK 3 0 Applications OTA TestPack\com\sun\applications\sdk\me\lwuit#LWUITDemo : lwuit\_LWUITDemo
- Java ME SDK 3 0 Applications OTA TestPack\com\sun\applications\sdk\me\midp#Demos : midp\_Demos
- Java ME SDK 3 0 Applications OTA TestPack\com\sun\applications\sdk\me\midp#Games : midp\_Games
- Java ME SDK 3 0 Applications OTA TestPack\com\sun\applications\sdk\me\midp#NetworkDemo : midp\_NetworkDemo
- Java ME SDK 3 0 Applications OTA TestPack\com\sun\applications\sdk\me\midp#PhotoAlbum : midp\_PhotoAlbum
- Java ME SDK 3 0 Applications OTA TestPack\com\sun\applications\sdk\me\midp#UIDemo : midp\_UIDemo

Report generated on 01.06.2009 0:57:35  
Using JT Harness 4.2; built on 27 Mar 2009 r. 0:00:00 MSK with Java(TM) 2 SDK, Version 1.5.0



# The Report Generation Tool

- > A report generation tool:
- > - processes standard framework reports
- > - generates additional uniform reports to analyze the statistical data of test results for:
  - > - one test cycle
  - > - all test cycles

# Demo Application Run Summary

Emulator:	
Build:	win32_mvm_full_b19
JDK Version:	JDK1.6.0_03
Date:	Mar 24, 2009
Passed:	79
Failed:	17
Error:	0

---

## Details

Test Pack	Session name	Passed	Failed	Error	Total
Applications_ES_Demos_OTA	ES_Demos	37	12	0	49
Applications_FX_Demos_OTA	FX_Demos	16	1	0	17
Applications_SDK_Demos_OTA	SDK_Demos	26	4	0	30

## Summary for all

Bundle Name	Date	Passed	Failed	Error	Total
win32_mvm_full_b19	Mar 24, 2009	87	9	0	96
win32_mvm_full_b18	Mar 22, 2009	85	11	0	96
win32_mvm_full_b17	Mar 20, 2009	79	17	0	96

applications_es_demos_ota	49
applications_fx_demos_ota	17
applications_sdk_demos_ota	30

### applications\_es\_demos\_ota

Bundle Name	Date	Passed	Failed	Error	Total
win32_mvm_full_b19	Mar 24, 2009	45	4	0	49
win32_mvm_full_b18	Mar 22, 2009	43	6	0	49
win32_mvm_full_b17	Mar 20, 2009	37	12	0	49

### applications\_fx\_demos\_ota

Bundle Name	Date	Passed	Failed	Error	Total
win32_mvm_full_b19	Mar 24, 2009	16	1	0	17
win32_mvm_full_b18	Mar 22, 2009	16	1	0	17
win32_mvm_full_b17	Mar 20, 2009	16	1	0	17

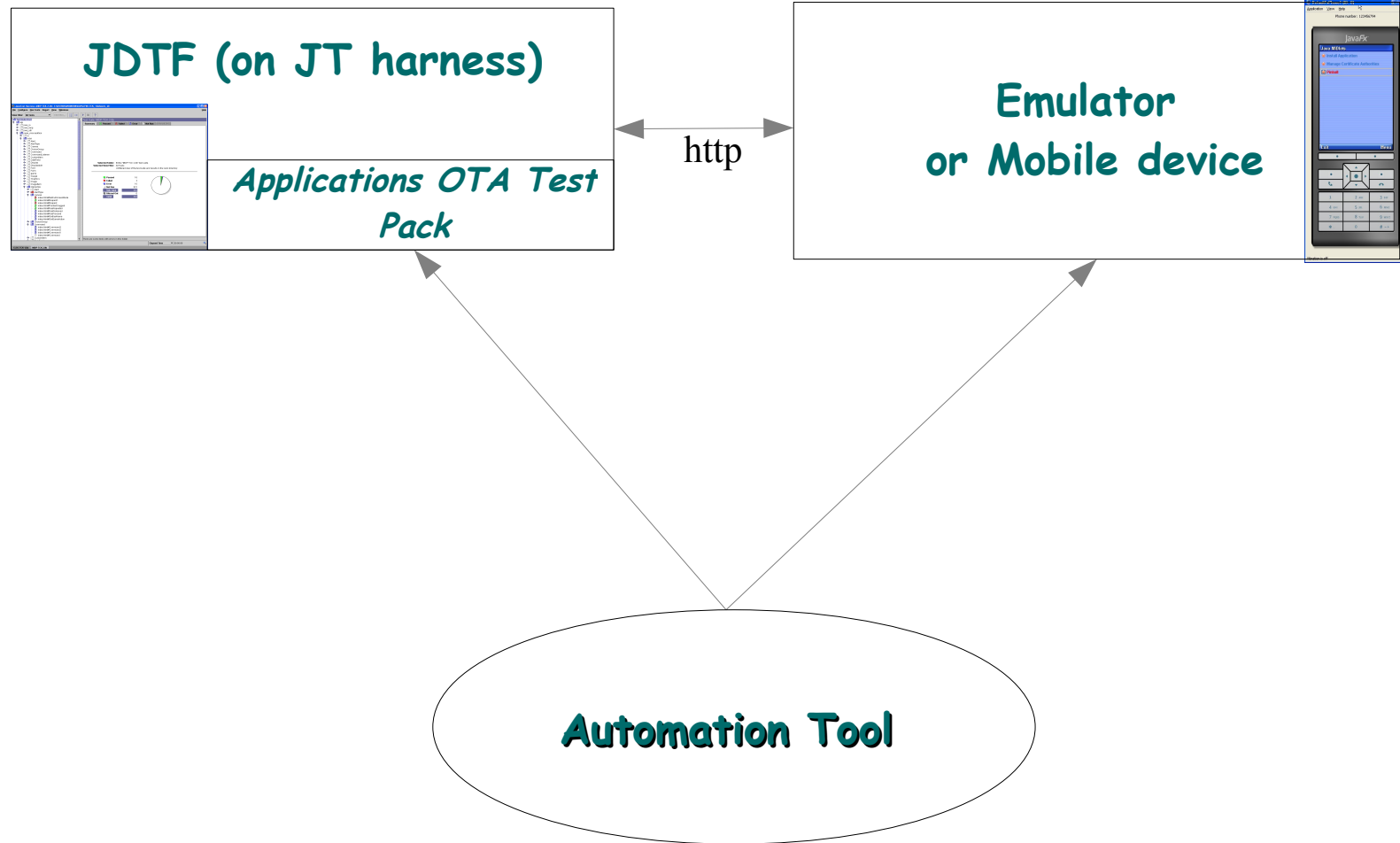
### applications\_sdk\_demos\_ota

Bundle Name	Date	Passed	Failed	Error	Total
win32_mvm_full_b19	Mar 24, 2009	26	4	0	30
win32_mvm_full_b18	Mar 22, 2009	26	4	0	30
win32_mvm_full_b17	Mar 20, 2009	26	4	0	30

# The Automation Tool

- > This tool automates:
  - > - running the harness OTA tests
  - > - deployment of applications
  - > - execution of application test scenarios  
on an emulator or a mobile device
- >





# Demonstration:

- > Run applications manually using JDTF
  - > - on the Java ME SDK Emulator
- > Automatically generate the JDTF OTA test pack
  - > - for a new set of applications
- > Run applications automatically by using the automation tool
  - > - on the Java ME SDK Emulator
  - > - on a mobile device
- > Reports generation

# Fantasy Becomes New Reality

- > We realized our application testing fantasy with standard tools and custom software:
  - Open source Java Device Test Framework
  - Custom test pack generator
  - Free Java ME SDK Emulator
  - Custom test run automator
  - Open source framework reports
  - Custom management reports



# Summary

- > Work with open source JDTF and free Java ME SDK emulator allows you to
  - > - Easily create and maintain AT test packs for developing platform (emulators and mobile devices)
  - > - Significantly decrease the efforts for AT
  - > - Create the solid ground for future testing automation and advanced reporting

## Q&A

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# JavaOne<sup>SM</sup>

# Thank You

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