



# ***IET Product Update***

## ***September 2012***



# Agenda

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- ▲ Product Overview
- ▲ Release 8.1
- ▲ WebCR
- ▲ VeriflEr
- ▲ pathvIEW
- ▲ Q&A

# IET Products



**GuardIEn**  
Life-Cycle Management



**VerifIEr**  
Automated QA



**XOS**  
Manage External Objects



**xTrace**  
Advanced tracing for z/OS



**Assistants**  
Developer Productivity Tools



**IETeGUI**  
Gen GUI Enhancer



**Object List+**  
Encyclopaedia Browsing



**pathvIEW**  
Code Coverage Testing



**genIE**  
Direct PAD Editing & Plug-ins

# Release 8.1

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- ▲ Available July 2011
- ▲ New Features
  - ▲ CSE Parallel Generation
  - ▲ CR Rework Manager
  - ▲ ISPW Interface
- ▲ Major Enhancements
  - ▲ Location Updating
  - ▲ XOS
- ▲ Built with Gen 8.0
  - ▲ Multi Row Fetch performance improvements
  - ▲ Dynamic RI for z/OS

# WebCR

The screenshot displays the WebCR application interface. On the left, a desktop application window titled "Session A - Pasha 4" shows a menu with options like "F02=Add CR", "F04=View Comments", etc. The main window is a web browser titled "Change Request List - Windows Internet Explorer" showing the "Change Request List" page. The page has a search sidebar and a table of change requests.

**Change Request List Table:**

Number	Status	Short Description	Owner	Assigned	Release	Cust Ref
13	Under Development	Migrate XO	DDP	DDP	R1.0	
10	Completed DEV	Simple quick demo change	GJD	GJD	R6	
8	User Accepted	Migrate test	DDP			
6	Completed DEV	XO Impact	DDP	DDP	R1.0	
4	Completed DEV	Promote CDPY change	DDP	DDP	R1.0	
3	Under Development	RAD chars	DDP	DDP	R1.0	
2	Completed DEV	ab change to external	DDP	DDP		
1	Installed in SIT	Externals	DDP	DDP		

The sidebar on the left of the web browser window includes search criteria filters: "This CR number and earlier" (99999), "Search for Text", "Status" (ALL), "Owner", "Assignee", "Release" (ALL), and checkboxes for "Unimplemented" and "More Filters".

# OL+ Impact Wizard

## ▲ Available in 8.1.2

**Impact Wizard**  
Apply the desired Actions to the Items below and press 'Analyse' when done...

Detect Changes Since  
19/04/2012 00:00:00 Detect...

Action
Change
<b>Change Interface</b>
Delete entire AB/PStep

Action Description  
Change Import/Export Views, Packaging, High Performance View Passing flag or Dynamic Linking properties

Choose additional options below to affect the style of Impact Analysis performed...

Multi Model Mode  
Single Model

☒ Include Disabled USE Statements

Impact Purpose  
☒ Changes required  
☐ Regens required

Dynamic Linking Style  
Everything Statically Linked

Item	What you plan to do with this item
ADD_OR_EDIT_CUSTOMER (ACBLKBSD)	Change Interface

Clear Analyse Cancel

List of Items to analyse

# Object List + Enhancements

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- ▲ Release 8.1.3
  - ▲ Multiple Model Searching
  - ▲ Multiple Type Searching
  - ▲ Compare PAD Ency vs. Toolset
  - ▲ Compare GUI Designs

# Quiz 1

```
CAP10091_CORE_APPLES_IET016_FAIL
```

```
IMPORTS:
```

```
Entity View import ap101_apple (optional,transient,import only)
    id (optional)
    common_name (optional)
```

```
EXPORTS:
```

```
Entity View export ap101_apple (transient,export only)
    id
    common_name
```

```
LOCALS:
```

```
Entity View local ap101_apple
    id
    common_name
```

```
ENTITY ACTIONS:
```

```
NOTE Chg History
```

```
USE create_apple
```

```
WHICH IMPORTS: Entity View local ap101_apple TO Entity View import ap101_apple
WHICH EXPORTS: Entity View export ap101_apple FROM Entity View export ap101_apple
```



# Quiz 2

```
= READ EACH db employee
    db job_role
    SORTED BY ASCENDING db job_role code
    SORTED BY ASCENDING db employee id
    WHERE DESIRED db employee has_position_defined_by DESIRED db job_role
    AND DESIRED db job_role code IS EQUAL TO "A"
    OR DESIRED db job_role code IS EQUAL TO "S"
```

could  
mean  
this...

```
= READ EACH db employee
    db job_role
    SORTED BY ASCENDING db job_role code
    SORTED BY ASCENDING db employee id
    WHERE DESIRED db employee has_position_defined_by DESIRED db job_role
    AND (DESIRED db job_role code IS EQUAL TO "A"
    OR DESIRED db job_role code IS EQUAL TO "S")
```

or  
this...

```
= READ EACH db employee
    db job_role
    SORTED BY ASCENDING db job_role code
    SORTED BY ASCENDING db employee id
    WHERE (DESIRED db employee has_position_defined_by DESIRED db job_role
    AND DESIRED db job_role code IS EQUAL TO "A")
    OR DESIRED db job_role code IS EQUAL TO "S"
```

```

= READ EACH db_another task
  WHERE DESIRED db_another task executes_on CURRENT db encyclopaedia
  AND (DESIRED db_another task status IS EQUAL TO "S"
  OR DESIRED db_another task status IS EQUAL TO "R")
  AND ((DESIRED db_another task from_model_id IS EQUAL TO temp_this task from_model_id
  AND (DESIRED db_another task type IS EQUAL TO "U"
  OR DESIRED db_another task type IS EQUAL TO "L"
  OR DESIRED db_another task type IS EQUAL TO "X"))
  OR (DESIRED db_another task from_model_id IS EQUAL TO temp_this task to_model_id
  AND (DESIRED db_another task type IS EQUAL TO "D"
  OR DESIRED db_another task type IS EQUAL TO "E"
  OR DESIRED db_another task type IS EQUAL TO "U"
  OR DESIRED db_another task type IS EQUAL TO "L"
  OR DESIRED db_another task type IS EQUAL TO "X"
  OR DESIRED db_another task type IS EQUAL TO "V"
  OR DESIRED db_another task type IS EQUAL TO "M"
  OR DESIRED db_another task type IS EQUAL TO "O"
  OR (DESIRED db_another task type IS EQUAL TO "G"
  AND DESIRED db_another task integer_parm_1 IS EQUAL TO 21
  OR DESIRED db_another task integer_parm_1 IS EQUAL TO 22
  OR DESIRED db_another task integer_parm_1 IS EQUAL TO 31
  OR DESIRED db_another task integer_parm_1 IS EQUAL TO 51
  OR DESIRED db_another task integer_parm_1 IS EQUAL TO 52
  OR DESIRED db_another task integer_parm_1 IS EQUAL TO 53
  OR DESIRED db_another task integer_parm_1 IS EQUAL TO 30))))
  OR (DESIRED db_another task to_model_id IS EQUAL TO temp_this task from_model_id
  AND (DESIRED db_another task type IS EQUAL TO "M"
  OR DESIRED db_another task type IS EQUAL TO "O"
  OR (DESIRED db_another task type IS EQUAL TO "G"
  AND (DESIRED db_another task integer_parm_1 IS EQUAL TO 22
  OR DESIRED db_another task integer_parm_1 IS EQUAL TO 52
  OR DESIRED db_another task integer_parm_1 IS EQUAL TO 31))))
  OR (DESIRED db_another task to_model_id IS EQUAL TO temp_this task to_model_id
  AND (DESIRED db_another task type IS EQUAL TO "M"
  OR DESIRED db_another task type IS EQUAL TO "O"
  OR (DESIRED db_another task type IS EQUAL TO "G"
  AND (DESIRED db_another task integer_parm_1 IS EQUAL TO 22
  OR DESIRED db_another task integer_parm_1 IS EQUAL TO 52
  OR DESIRED db_another task integer_parm_1 IS EQUAL TO 31))))))

```

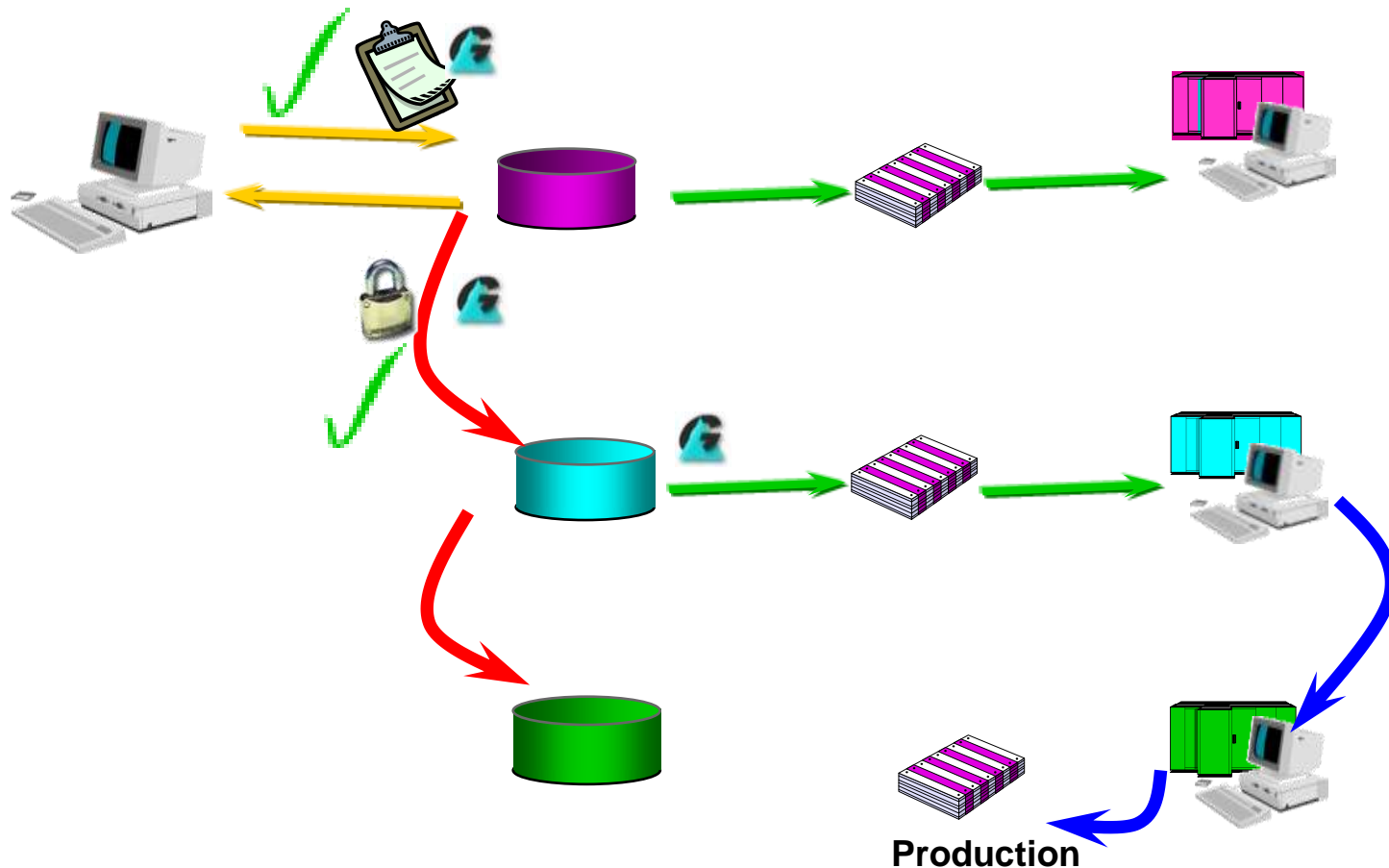


Automated code checking and QA for CA Gen

# What is VeriflEr?



- ▲ Automated, configurable QA tool for ensuring that CA Gen models are compliant with site standards



# Standard Checks



- ▲ Developed and Maintained by IET
  - ▲ >150 checks currently available
- ▲ Examples
  - ▲ Naming Standards
    - ▲ Action Blocks, Views, Packaging, etc.
  - ▲ Error Detection
    - ▲ Unpopulated views, Ambiguous OR, Invalid view mapping
  - ▲ Coding Standards
    - ▲ Return code checking, group view types, etc.
  - ▲ CBD Architecture Standards
    - ▲ Tiering, Standards, etc.
  - ▲ Performance
    - ▲ READ Efficiency, Perfect View Matching, Use of Functions, etc.
  - ▲ User Interface Standards
    - ▲ Help Ids, Tab Sequencing, Colours, Sizes, etc.
  - ▲ Audit Checks
    - ▲ Compliance checks

# Integrated into the Development Process



- ▲ Enables checks to be easily performed at key points in the development life-cycle
  - ▲ On Upload
  - ▲ CR Status Change
  - ▲ Pre Migrate
  - ▲ System Update Step
- ▲ Verification can be made mandatory
- ▲ Toolset Plug-in
  - ▲ Allows verification prior to upload

# Automated Fixing with genIE



- ▲ VerifIEr contains integration with genIE
  - ▲ Enables automatic fixing of certain errors
  - ▲ Examples:
    - ▲ Delete Unused Views
    - ▲ Re-order Views
    - ▲ Multi-row Fetch
    - ▲ Convert READs to use IN & BETWEEN



```

= READ EACH db_another task
  WHERE DESIRED db_another task executes_on CURRENT db encyclopaedia
  AND (DESIRED db_another task status IS EQUAL TO "S"
  OR DESIRED db_another task status IS EQUAL TO "R")
  AND ((DESIRED db_another task from_model_id IS EQUAL TO temp_this task from_model_id
  AND (DESIRED db_another task type IS EQUAL TO "U"
  OR DESIRED db_another task type IS EQUAL TO "L"
  OR DESIRED db_another task type IS EQUAL TO "X"))
  OR (DESIRED db_another task from_model_id IS EQUAL TO temp_this task to_model_id
  AND (DESIRED db_another task type IS EQUAL TO "D"
  OR DESIRED db_another task type IS EQUAL TO "E"
  OR DESIRED db_another task type IS EQUAL TO "U"
  OR DESIRED db_another task type IS EQUAL TO "L"
  OR DESIRED db_another task type IS EQUAL TO "X"
  OR DESIRED db_another task type IS EQUAL TO "V"
  OR DESIRED db_another task type IS EQUAL TO "M"
  OR DESIRED db_another task type IS EQUAL TO "O"
  OR (DESIRED db_another task type IS EQUAL TO "G"
  AND DESIRED db_another task integer_parm_1 IS EQUAL TO 21
  OR DESIRED db_another task integer_parm_1 IS EQUAL TO 22
  OR DESIRED db_another task integer_parm_1 IS EQUAL TO 31
  OR DESIRED db_another task integer_parm_1 IS EQUAL TO 51
  OR DESIRED db_another task integer_parm_1 IS EQUAL TO 52
  OR DESIRED db_another task integer_parm_1 IS EQUAL TO 53
  OR DESIRED db_another task integer_parm_1 IS EQUAL TO 30)))
  OR (DESIRED db_another task to_model_id IS EQUAL TO temp_this task from_model_id
  AND (DESIRED db_another task type IS EQUAL TO "M"
  OR DESIRED db_another task type IS EQUAL TO "O"
  OR (DESIRED db_another task type IS EQUAL TO "G"
  AND (DESIRED db_another task integer_parm_1 IS EQUAL TO 22
  OR DESIRED db_another task integer_parm_1 IS EQUAL TO 52
  OR DESIRED db_another task integer_parm_1 IS EQUAL TO 31))))
  OR (DESIRED db_another task to_model_id IS EQUAL TO temp_this task to_model_id
  AND (DESIRED db_another task type IS EQUAL TO "M"
  OR DESIRED db_another task type IS EQUAL TO "O"
  OR (DESIRED db_another task type IS EQUAL TO "G"
  AND (DESIRED db_another task integer_parm_1 IS EQUAL TO 22
  OR DESIRED db_another task integer_parm_1 IS EQUAL TO 52
  OR DESIRED db_another task integer_parm_1 IS EQUAL TO 31))))))

```



# Enhanced with genIE

```
= READ EACH db_another task
    WHERE DESIRED db_another task executes_on CURRENT db encyclopaedia
    AND DESIRED db_another task status IS IN ("S", "R")
    AND ((DESIRED db_another task from_model_id IS EQUAL TO temp_this task from_model_id
    AND DESIRED db_another task type IS IN ("U", "L", "X"))
    OR (DESIRED db_another task from_model_id IS EQUAL TO temp_this task to_model_id
    AND (DESIRED db_another task type IS IN ("D", "E", "U", "L", "X", "V", "M", "O")
    OR (DESIRED db_another task type IS EQUAL TO "G"
    AND DESIRED db_another task integer_parm_1 IS IN (21, 22, 31, 51, 52, 53, 30))))
    OR (DESIRED db_another task to_model_id IS EQUAL TO temp_this task from_model_id
    AND (DESIRED db_another task type IS IN ("M", "O")
    OR (DESIRED db_another task type IS EQUAL TO "G"
    AND DESIRED db_another task integer_parm_1 IS IN (22, 52, 31))))
    OR (DESIRED db_another task to_model_id IS EQUAL TO temp_this task to_model_id
    AND (DESIRED db_another task type IS IN ("M", "O")
    OR (DESIRED db_another task type IS EQUAL TO "G"
    AND DESIRED db_another task integer_parm_1 IS IN (22, 52, 31))))
```

# Benefits



- ▲ Automated checking reduces time & effort spent on verification
- ▲ Checks can be performed multiple times, thus catching errors early
- ▲ Verification on upload provides immediate notification of errors.
- ▲ Toolset plug-in allows checking before upload
- ▲ Checks can be performed by non-experts
- ▲ Enables checks that would be impractical to perform manually



# ***pathvIEW***

***The path to testing success for CA Gen***

# pathvIEW



- ▲ Code Coverage Introduction
- ▲ pathvIEW Overview
- ▲ Demonstration

# Software Testing

- ▲ Functional Testing

- ▲ Compare behaviour against requirements
- ▲ Black-box



- ▲ Structural Testing

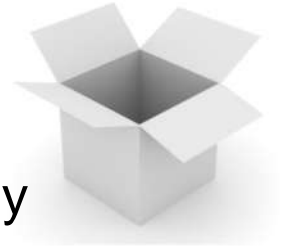
- ▲ Compare behaviour against intention of source code
- ▲ White-box



# Code Coverage Introduction



- ▲ Structural Testing
  - ▲ Does not replace the need for Functional Testing
- ▲ One of the earliest forms of software testing and widely practiced and accepted
- ▲ Simple coverage metric : Coverage %
  - ▲ 0% - no statements have been executed
  - ▲ 100% - all statements have been executed
  - ▲ Measure of quality of testing, not quality of software



# Code Coverage Testing

- ▲ Code Coverage process
  - ▲ Determine areas of code not executed during testing
  - ▲ Identify why code not executed
  - ▲ Create additional test cases to increase coverage
- ▲ Helpful *additional* testing tool
  - ▲ Code coverage tools are "only helpful if they're used to *enhance* thought, not *replace* it" Brian Marick
- ▲ Do not always need 100% coverage
  - ▲ but less than 80% should be worrying...

# pathvIEW



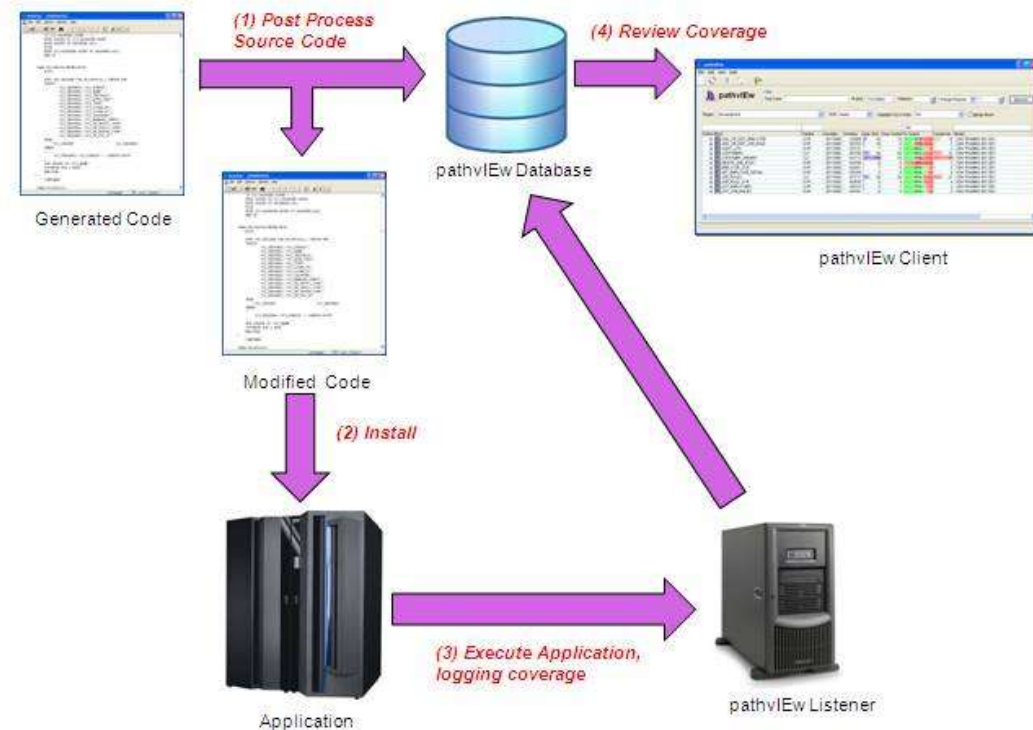
- ▲ Statement level code coverage for CA Gen generated code
  - ▲ Procedure Step Action Diagram
  - ▲ Action Block
- ▲ Support for major target environments
  - ▲ MVS/Cobol
  - ▲ Windows/C
  - ▲ UNIX/C
  - ▲ Java
- ▲ Support for Gen 6.5, 7.6 and 8.0



# pathvIEW Architecture



- ▲ Generate standard source code (C, COBOL, Java, etc.)
- ▲ Source code post processed
  - ▲ Adds data collection logic
- ▲ Execute application
  - ▲ Coverage data sent to Listener
  - ▲ Results stored in database
- ▲ pathvIEW Client to review results



# pathvIEW Features



- ▲ Does not alter behaviour of generated code
- ▲ Low runtime overhead
  - ▲ Negligible overhead for memory and CPU
- ▲ Simple TCP/IP communications
  - ▲ Multi-threaded Listener
- ▲ Integration with GuardIEn
  - ▲ View code coverage by CR, Release, Release Pack, System Update, etc.

# Benefits



- ▲ Identifies untested code
- ▲ Ensure changed modules are thoroughly tested
- ▲ Helps identify redundant code

# Product Plans

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- ▲ 8.1.4 (October 2012)
  - ▲ Data Integrity Check SQL Generator
  - ▲ XOS – Multiple targets per environment/release
  - ▲ Linking Gen r8 on z/OS enhancements
- ▲ 8.5 (May 2013)
  - ▲ Gen 8.5 support

# Q&A

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