

## MERCURY INTERACTIVE



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#### W. Edward Deming



# The process

## **Ongoing Improvement**

#### **Best practices**



# Topics

- Improvement & organization business goals
- Improvement of root cause
- Basic stages for improvement of projects



## The classic story Product interoperability

Release 6.0 – crashes Customers configuration – Not tested Customer is excited - problem is solved **Developers on site** Customer environment verified Release 6.5 Customer configuration has Release 7.0 – crashes Interoperability **Testing Syndicate** of the NATO Interoperability Requirements Testing and Support Working Group (IRTSWG) EOS appointed 😕 CLESTON HER HER DID NO IN THE NEW MILLENNIUM www.mercuryinterac



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# The classic Story - Introspect

- 1<sup>st</sup> step Customer facing ASAP
- ✓ 2<sup>nd</sup> step Prevent future flare-ups
- X 3<sup>rd</sup> step Testing to keep track of customer configuration



# Focus on:

#### ✓ Root cause



#### **×**Symptoms



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Get the top down view

#### ✓ Is it effective?





# Improvement



# Get the bottom up view

#### ✓ Is it efficient?



## The combined approach





## **Analysis Methodology**





# Time to market



# Basic phases for the improvement of projects



# Understand the root cause

#### •Fishbone diagram

•Five Why's

Brainstorming





#### Lead time – Cause effect Diagram







#### Lead time – Cause effect Diagram





#### Lead time – Cause effect Diagram





# **Understand the Root Cause**

- Root cause buried deep beneath a mountain of symptoms
- Fishbone diagram documents the entire solution domain
- Selects the bones that look most likely to yield a cause you can solve



# Justify the improvement effort

#### Sell the solution

- Decrease rework costs
- Increase productivity
  - Reduction on TTM
  - Decrease development costs
- Avoided pain





# Justify the improvement effort





# **Coordinate multiple projects**

- •1<sup>st</sup> Project Pick the low hanging fruit
- •Build a successful track
- •One project at a time
- Avoid multiple changes
- •Communicate project information





# **Overcome & monitor obstacles**

#### Consider improvement project as a regular software development project





## Improvement program risk



#### **The Problem**

#### How to test an Enterprise J2EE Application with Limited Resources

### **The Solution**

#### Lab and Processes Automation



## **Automation Flow**





# **Avoided pain**

✓ Full Regression Test Cycle on All Daily Builds

 Full reuse of test infrastructure in order to cover more Backend and Client Side platforms

 Robust testing infrastructure, enabling seamless test additions and removals as well as migrations between versions



## **Drawbacks and Risks**

#### ! Large investment in Testing Infrastructure

- 2 Man-Months for infrastructure & initial tests
- 2 Man-Week migration to new version
- <sup>1</sup>/<sub>2</sub> Hour for Results Analysis per run

#### ! High investment in the Testing Laboratory

#### ♦ High dependency on deliverables from R&D





#### **Server and Client Infra**

One of the biggest issues was to detect the new builds & prepare the Testing Environments





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## **Regression Test**

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| roject : A_TD_WEB [joel] REC                                      | QUIREMENTS | TEST PLAN   TEST LAB   DEFECTS             |             |          |              |              | TOOLS     | HELP LOG     | OUT |  |  |  |
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| Test Sets Tree V Execution Grid A Execution Flow E Execution Flow |            |  |             |          |              |              |           |              |     |  |  |  |
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| Accentance 2684   |            | Dian: Test Name                            | Dian: Tuna  | Statua   | Reenopoible  | Actual Tanta | Even Date | Time         |     |  |  |  |
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|   | >          | [1]Config_Acceptance_Test_Set              | VAPI-XP-TES | ؇ Passed | admin        | alexk        | 07/21/03  | 3:10:52 PM   |     |  |  |  |
| - Acceptance 2695   |            | [1]TSTSRV_Environment_Installation         | VAPI-XP-TES | 💙 Passed | zahim        | zahim        | 07/07/03  | 11:04:31 PM  |     |  |  |  |
| Acceptance 2697   |            | 🙀 [1]System_Test_Agent_Installation_and_Co | WR-AUTOMA   | 💙 Passed | zahim        | zahim        | 07/07/03  | 11:07:42 PM  |     |  |  |  |
| Acceptance 2698   |            | 🙀 [1]Install                               | WR-AUTOMA   | 💙 Passed | zahim        | zahim        | 07/07/03  | 11:24:06 PM  |     |  |  |  |
| Acceptance 2699   |            | 🧔 [1]Reboot After Install                  | SYSTEM-TES  | 💙 Passed | zahim        | zahim        | 07/07/03  | 11:26:24 PM  |     |  |  |  |
| Acceptance 2000   | -          | 💏 [1]Create New DB                         | WR-AUTOMA   | 💙 Passed | zahim        | zahim        | 07/07/03  | 11:29:48 PM  |     |  |  |  |
| Acceptance 2802   |            | 🙀 [1]pl_Add_Folder                         | WR-AUTOMA   | 🔀 Failed | zahim        | tania        | 07/14/03  | 2:57:33 PM   |     |  |  |  |
| Acceptance 2803   |            | 🙀 [1]pl_Add_Empty_Folder                   | WR-AUTOMA   | 💙 Passed | zahim        | tania        | 07/14/03  | 5:40:29 PM   |     |  |  |  |
| Acceptance 2804   |            | 🙀 [1]pl_Add_Duplicate_Folder               | WR-AUTOMA   | X Failed | zahim        | tania        | 07/15/03  | 10:03:05 AM  |     |  |  |  |
| Acceptance 2806   |            | 🙀 [1]pl_Copy_Paste_Folder                  | WR-AUTOMA   | 💙 Passed | zahim        | zahim        | 07/07/03  | 11:34:34 PM  |     |  |  |  |
|   |            | 1]pl_Modify_Folder_Description             | WR-AUTOMA   | V Passed | zahim        | zahim        | 07/07/03  | 11:36:08 PM  |     |  |  |  |
| Acceptance 2808   |            | 1]pl_Delete_Folder                         | WR-AUTOMA   | 💙 Passed | zahim        | tania        | 07/15/03  | 12:01:28 PM  |     |  |  |  |
| Acceptance 2810   |            | 1]pl_Add_Manual_Tests_With_Steps           | WR-AUTOMA   | 💙 Passed | zahim        | zahim        | 07/07/03  | 11:38:41 PM  |     |  |  |  |
| Acceptance 2612   |            | 1 [1]pl Add Attachment To Test             | WR-AUTOMA   | V Passed | zahim        | zahim        | 07/07/03  | 11:39:16 PM  |     |  |  |  |
| Acceptance buildTD2812  |            | 1 [1]pl Copy Paste_Test                    | WR-AUTOMA   | V Passed | zahim        | zahim        | 07/07/03  | 11:40:25 PM  |     |  |  |  |
| Acceptance buildTD2818SP  |            | 1 [1]pl Modify Test Description            | WR-AUTOMA   | V Passed | zahim        | zahim        | 07/07/03  | 11:41:42 PM  |     |  |  |  |
| Acceptance Template   |            | 1]pl_Delete_Manual_Test                    | WR-AUTOMA   | V Passed | zahim        | zahim        | 07/07/03  | 11:42:33 PM  |     |  |  |  |
|   |            | 11pl Add Steps old                         | WR-AUTOMA   | V Passed | zahim        | zahim        | 07/07/03  | 11:43:55 PM  |     |  |  |  |
| Automation Trial Test   |            | 11pl Add Description                       | WR-AUTOMA   | V Passed | zahim        | zahim        | 07/07/03  | 11:45:42 PM  |     |  |  |  |
| E Automated Single User Experienc                                 |            | 11pl Add Expected                          | WR-AUTOMA   | V Passed | zahim        | zahim        | 07/07/03  | 11:47:26 PM  |     |  |  |  |
| Automated Upgrade and Borrow                                      |            | 11rg Add Requirement                       | WR-AUTOMA   | V Passed | zahim        | zahim        | 07/07/03  | 11:52:44 PM  |     |  |  |  |
| Home Automation Client Controller                                 |            | 11rg Delete Requirement                    | WR-AUTOMA   | V Passed | zahim        | zahim        | 07/07/03  | 11:53:46 PM  |     |  |  |  |
| The Full Cycle before RC  |            | 11rg Add Description                       | WR-AUTOMA   | V Passed | zahim        | zahim        | 07/07/03  | 11:56:53 PM  |     |  |  |  |
|   |            | 11 [1]rg Modify Description                | WR-AUTOMA   | V Passed | zahim        | zahim        | 07/08/03  | 12:00:04 AM  |     |  |  |  |
| + Regression Cycle befor GA                                       |            | 11/1 rename requirement                    | MR-ALITOMA  | V Passed | admin        | zahim        | 07/08/03  | 12:04:43 AM  |     |  |  |  |



## **Regression Test**





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## **Regression Test - Report**

| V)gremlins\SUE_Logs\Acceptance buildTD  | 2812.htm - Microsoft Inte   | rnet Explorer   |                           |                  |  |  |  |  |  |  |
|---|---|---|---------------------------|------------------|--|--|--|--|--|--|
| <u>File E</u> dit <u>V</u> iew F <u>a</u> vorites <u>T</u> ools <u>H</u> elp                                  |   |   |                           | 100 A            |  |  |  |  |  |  |
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| Address 🕘 \\gremlins\SUE_Logs\Acceptance build"   | D2812.htm   |   |                           | ▼ 🖓 Go Links ≫   |  |  |  |  |  |  |
| Test Set : Acceptance buildTD2818SP1 (FULL LEVEL Mode)  |   |   |                           |                  |  |  |  |  |  |  |
| Test Set Status Summary   |   |   |                           |                  |  |  |  |  |  |  |
| Started   | 8/25/2003 12:12:27 1  | ?M  |                           |                  |  |  |  |  |  |  |
| Possed Tests  | 02<br>47  |   |                           |                  |  |  |  |  |  |  |
| Failed Tests  | 47  |   |                           |                  |  |  |  |  |  |  |
| Other Tests   | 2   |   |                           |                  |  |  |  |  |  |  |
| Finished  | -<br>8/25/2003 - 7:28:02 P  | vr  |                           |                  |  |  |  |  |  |  |
|   |   |   |                           |                  |  |  |  |  |  |  |
| [1]Config_Acceptance_Test_Set <   | Passed> Started <1  | 2:08:24 PM> Finished <12:09   | :10 PM>                   |                  |  |  |  |  |  |  |
| Step Name   | Status  | Description   | Expected                  | Actual           |  |  |  |  |  |  |
| [1]TSTSRV Environment Installation <passed> Started &lt;12:09:11 PM&gt; Finished &lt;12:10:55 PM&gt;</passed> |   |   |                           |                  |  |  |  |  |  |  |
| Step Name   | Status  | Description   | Expected                  | Actual           |  |  |  |  |  |  |
| [1]System_Test_Agent_Installation_a   | nd_Configuration <f< td=""><td>Passed&gt; Started &lt;12:10:56 PI</td><td>M&gt; Finished &lt;12:12:16 PM&gt;</td><td></td></f<> | Passed> Started <12:10:56 PI  | M> Finished <12:12:16 PM> |                  |  |  |  |  |  |  |
| Step Name   | Status  | Description   | Expected                  | Actual           |  |  |  |  |  |  |
| [1]Install <passed> Started &lt;1</passed>  | 2:12:16 PM> Finish  | ed <12:32:42 PM>  |                           |                  |  |  |  |  |  |  |
| Step Nam  | e Statu   | s Description   | Expected                  | Actual           |  |  |  |  |  |  |
| Start Installation From %21<br>\build80<br>\buildTD2812_Release\Ru<br>The Installation Found Win              | 2.199.91.45<br>Passi<br>nimage\setup.exe<br>dow Welcome Passi   | ed and a second s |                           |                  |  |  |  |  |  |  |
| Select : Next Option  | Pass  | ed  |                           |                  |  |  |  |  |  |  |
| E Done  |   |   |                           | 📴 Local intranet |  |  |  |  |  |  |



# **Develop a transition plan**





# Pilot group

- $\beta$  Start with a pilot release, select carefully:
  - Early adopters
  - · Perform the solution immediately
  - Expend extra time at something new
  - Define metrics
  - Willing to provide feedback

Talk to the pilot group before, during and after, collect ideas for improvements



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## **Basic stages of improvement project**





# **Evaluate results**

Evaluate results against your stated goals. Did you get the results you expected?

> Realistic goals? Learning curve accounted for? Another iteration?

Key

?

Conduct a retrospective on the improvement project

Gather stakeholders, change team, managers involvedDiscuss the pros & cons of the project



#### **Version Status - Open Defects**





#### **Version Progress by Defects**





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#### **Remaining QA task – defects fix verification**





## **Best Practices to Keep in Mind**

✓ Define the **problem** statement

✓ Define the **goal** of the project

- ✓ Define the scope of the improvement
- Determine the stakeholders in the improvement project



## **Best Practices to Keep in Mind**

- Develop a project plan task list
- ✓ Obtain resources committed to the project
- Plan a schedule based on the resources availability &
  Update it regularly
- ✓ Implement a method for **tracking** the project



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