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Business Driven Technology Solutions

Software Test Automation

**Beyond Computer Assisted Testing.
Beyond Automated Testing.**

Supporting the Testing Process

- **“Consider thinking of test automation as any use of tools to support testing.”**
– James Bach

Tools are Here to Stay

- **As test organizations we do use tools, both purchased and homegrown.**
- **There are people who know how to use those tools, and those that need to be trained.**
- **Those who do the using and those who do the supporting.**
- **Tools themselves have become a complex issue around which much communication is needed.**

-ation and -ing

- **-ation (*suff.*)**
 - Action or process: *strangulation.*
- **-ing (*suff.*)**
 - An instance of an action, process, or act: *a gathering.*
 - The result of an action or process: *a drawing.*

Test Automation and Testing

- **Test Automation is not Testing.**
- **Test Automation supports Testing.**
- **Test Automation is a process to be managed.**

A Development Process

- **Needs to be requirement driven to succeed.**
- **Large projects should be identified as manageable micro projects.**
- **All deliverables should be traceable through the Test Plan, the Quality Plan, and ultimately to the goals of the product under test.**
- **Large projects benefit from a distinct Automation Plan.**
- **Should be managed as part of the over all SDLC of the project.**

Models: A Management Focus

- **Software Engineering Institute: CMM**
- **Krause Software Testing Maturity Model.**
- **Automated Test Lifecycle Methodology.**
- **Quality Center of Excellence Maturity Model**



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Software Engineering Institute: CMM

- **Level 1: Initial**
- **Level 2: Repeatable**
- **Level 3: Defined**
- **Level 4: Managed**
- **Level 5: Optimizing**



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Krause Maturity Model

- **Level 1: Accidental Automation**
- **Level 2: Beginning Automation**
- **Level 3: Intentional Automation**
- **Level 4: Advanced Automation**

Automated Test Lifecycle Methodology

- **Phase 1: Decision to Automate**
- **Phase 2: Test Tool Acquisition**
- **Phase 3: Introduction of Automated Process**
- **Phase 4: Planning, Design, Development**
- **Phase 5: Execution – Automated Testing**
- **Phase 6: Review and Assessment**

Quality Center of Excellence Maturity Model

- **Stage 0: Project Testing**
- **Stage 1: Product Utility**
- **Stage 2: Service Utility**
- **Stage 3: Quality Authority**



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Models: A Development Focus

- **Generation 1: Record and Replay**
- **Generation 2: Custom Scripts... (Applications.)**
- **Generation 3: Data Driven Testing**
- **Generation 4: Framework Oriented**
- **Generation 5: Business Process Driven**
- **Generation 6: The future... Goal Driven Testing?**

Record and Replay

- **The “Wow” that sells the movement.**
- **Interacts with the application user interface on a similar level as that of the end user.**
- **Provide near instant gratification.**
- **Usually involve unrepeatable, undefined, complex processes involving high maintenance costs.**
- **Testing with an “out of the box” tool, only allows you to test with “inside the box” methodology.**
- **Almost all graphical user interface applications pass through this stage to get to the next.**



Custom Scripts

- **Getting record and replay to work more than once.**
- **Recording tools usually create scripts “behind the scenes,” and usually allow the test developer to enhance the script for expanded functionality.**
- **Focus is on getting the test to do more, and do what it does better with fewer “false positives.”**
- **Libraries get developed.**
- **Code reuses begins.**

Data Driven Testing

- **Application input data are extracted from the test script for maintainability and expansion of scope.**
- **Validation data are maintained separately.**
- **Comparisons begin to be automated based on the repositories containing input and validation data.**
- **Data stored in flat files, spreadsheets, or databases depending upon the complexity of the data and the extent to which it needs to be accessed by test scripts.**

Framework Oriented

- **Artifacts become more structured and controlled.**
- **If not already present, an overall approach and strategy is defined for all test processes.**
- **The process is manageable and managed.**
- **This results in the ability to begin writing tests more abstractly using methodologies such as Hans Buwalda's Test Frame/Action Word approach.**
- **Several tools on the market incorporate a keyword driven approach, and manage test assets.**
- **Keyword = Function/Method**
- **Parameters are data scenarios.**



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Business Process Driven

- **Macroscopic focus allows tests to be created from the process requirements.**
- **Drive pre-selected keyword scenarios.**
- **Data selected for input are identified for the accomplishment of specific business processes, generally end user oriented.**
- **Contains a high degree of reuse among all artifacts: data, code, input files, comparison data, error handling, and reporting mechanisms.**



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Development Means Change

- ***“...it must be a requirement of the automation to deal smoothly with late changes.” – Cem Kaner***



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Human Constraints

- **Test organization buy in, and involvement during the process.**
- **Management endorsement, and *active support*.**
- **Clear expectations and realistic goals.**
- **Skilled staff responsible for outcomes, and focused on the goals of the automation effort.**



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Technical Constraints

- **Infrastructure and environment constraints.**
- **Coding standards and documentation.**
- **Change control of the assets.**
- **Configuration Management.**
 - Synchronizing with the product development.
- **Tool selection and agreement.**
- **Artifact control and management**
- **Results analysis.**

Ryan Hunt

- **Ryan Hunt** — rhunt@criadvantage.com
- **Solution Architect:** Ryan has been involved in various stages of development and system administration for the last 13 years, with the last five focused on Quality Assurance, advocating the implementation of Quality processes at every stage of development. He has a strong background in automation frameworks, and has been on the executive team of several startup technology ventures. Ryan was a principle in a successful Web services company offering application development and hosting. He joins CRI after his recent work with HP implementing Mercury tools and an automation framework for regression testing.

End

- **End of Slides**



References

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