How To Apply Software Archeology To Your Development Process

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• CodeGear
Who is Mike?

• You just said that
  – PLSM (Product Line Sales Manager)

• Responsibilities
  – Helping rebuild the developer tools and databases

• Left Borland 1/2006

• Why did I come back?

• Prior
  – Chief Technical Architect – Borland
  – Creator of Mastering JBuilder – Wiley Books

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Ground rules for presentation

• All questions are valid
• This is NOT a sales presentation
• If you have a question, ask… if you have it most likely other members of the audience has it to…
Agenda

• The process: What is Software Archeology?
• Future tools: What are Software Factories?
• CodeGear: Company background
• Q&A
The process

• What is Software Archeology?
Current state of IT in the U.S. and around the world

• The need for new or modernizing applications is not decreasing or going away

• U.S. had the lowest C/S graduation in 2007
  – Qualified individuals are not filling the market

• Outsourcing is not always a solution on the table?
  – Not allowed or applicable
  – Bigger issues around this area, latest data shows 50% for non-government organizations

• Knowledge transfer gap
What is Software Archeology?

• A process for approaching unknown software that we have become responsible for...

• An approach to unraveling the complexities of an existing application

• A lightweight process for getting understanding of existing source code

• The analysis of past applications to learn and understand why it was done that way
Software Archeology
Software Archeology

- Visualization
- Design Violation
- Style Violations
- Business Logic Review
- Performance Review
- Documentation
Software Archeology
Why is Software Archeology important?

• Always asked to rebuild the wheel
  – How many times have you been asked to recreate this current implementation, but better?

• Inheritance of code

• Outsourcing

• Graying of IT
Why is Software Archeology important?

• Always asked to rebuild the wheel

• Inheritance of code
  – How many times have you picked up someone else's code or project… to be enhanced?

• Outsourcing

• Graying of IT
Why is Software Archeology important?

• Always asked to rebuild the wheel

• Inheritance of code

• Outsourcing
  – Projects get outsourced, rural sourced, in-sourced, local sourced, and every other kind of sourced…
  – Do you understand the systems that were created?
  – Do the outsourcers understand the system they are inheriting?

• Graying of IT
Why is Software Archeology important?

• Always asked to rebuild the wheel
• Inheritance of code
• Outsourcing
• Graying of IT
  – By 2010... almost 37% of the software industry will consist of persons older then 50!
  – 60% of the federal workforce will be eligible to retire over the next 10 years
    • By 2010... 18.5 percent of the government workforce – about 290,000 employees – will retire
  – Do you understand the systems they have created?
What can be learned?

• High-level architectural understanding
• Weak-points in existing software
  – Maintenance nightmares
  – Performance bottlenecks
• Standards compliance or lack there of…
• The overall health and value of the application
• Architectural approaches or how not to solve a problem
• Finding and Harvesting of Algorithms and patterns
What tools are needed?

• Need to be able to get a picture

• Need to be able to do static analysis

• Need to be able to do Dynamic analysis

• Need to be able to test the system

• Need to evaluate the performance

• Can it be done by hand?
  – Yes… but very time consuming… code reviews, system tests, and primitive system performance models

• Is there a better way?
  – Use a software tool
What is the cost of code reviews

• Very controversial subject
• But for me tools can enhance the approach

• Task
  – Review by hand a small example set of code
    • 5 classes, 139 lines of code, 4 “experts” in 15 minutes
    • Average audit violations detected: 21
  time: 0.25 hr

• Comparison
  – The same set of code analyzed by a machine:
    • Audit violations detected: 150
    time: 2 sec
  – Humans @ 84/hr

• Real “sample” Project
  – 187,600 violations in 100 minutes on a project with 1233 classes and 199,146 lines of code
  – 32,443 violations using the default set
  – Actual customer case studies show ~400 man/hour savings per code review
Future tools:

• What are Software Factories?
What is an AssetLibrary™

• A repository that can hold and manage AppModules.

• It will manage the lifecycle of AppModules.
How do Application Factories work?

•Let’s walk through a simple scenario
Instant Understanding...
Applications are complex – tagging & Navigation

- Almost instant productivity gains and better understanding
- Increase base understanding through the use of tagging
- Understand complex navigational structures of an application
Produce process
Applications are complex

- Architects have a complete implementation and conceptual understanding of an application.
- They also understand the intent and evolution of the application.
- However explaining, extending, and reusing parts of the application is near impossible.
Harvesting functionality

- Isolate key functionality or components of an application
• Think of the application module as the shopping cart functionality found inside a large e-Commerce application

• Add “expert” context and understanding with intent
Storage for reuse

- Application Modules have a life of their own
- Application Modules evolve and grow in understanding and intent
- Application Modules are now ready for reuse
Morphing the IDE

Metadata changes the ide.
Consume
Ready to build new application

AssetLibrary™

- Each module is assembled with understanding and intent
- Application modules include the underlying metadata
- Application Modules are now ready for reuse
Framework neutral approach

• Application Factories
  – Don’t rely on any “one” framework – all Java frameworks are valid
  – Use existing Eclipse-ecosystem to support multiple frameworks
    • Don’t build a better wizard, building a higher level of abstraction and understanding
    • Mix and Match for best solution
Application Factories Vision

• Application-driven development paradigm

• The structure, evolution, and logic behind the development of the Application belong to the application itself and are attached as metadata.

• Applications along with attached metadata are shared as reusable software assets
CodeGear background/history
Evolution of Borland

Borland Founded in 1983 – By French Immigrant Philippe Kahn
Focused on:
• 100% Focus on Developer Productivity
• Target Market: Developers
• First Product: Turbo Pascal

Late 2006: CodeGear – the tools division created

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<thead>
<tr>
<th>Application Lifecycle Management</th>
<th>StarTeam</th>
<th>Tempo</th>
<th>Silk</th>
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<tbody>
<tr>
<td></td>
<td>CaliberRM</td>
<td>Together</td>
<td>Gauntlet</td>
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<th>Delphi for PHP</th>
<th>C++Builder</th>
<th>3rd Rail</th>
<th>Blackfish SQL</th>
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<td>InterBase</td>
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New News…

CodeGear™ JBuilder® 2007 Is Named Best Java Integrated Development Environment of the Year by InfoWorld


JBuilder 2007 is an IDE built on the open source Eclipse framework, which makes development of Java and Web-based collaborative applications faster and more reliable. JBuilder 2007 combines the advantages of the Eclipse framework with JBuilder’s innovative rapid application development (RAD) functionality, ease-of-use and productivity, and collaborative capabilities that help developers and organizations more effectively manage complex projects across locations and teams.

The InfoWorld awards recognize significant technologies of the past year that promise to make the greatest impact on enterprise IT strategies as well as the products that best exemplify the implementation of those technologies. The InfoWorld Technology of the Year awards are not open to outside nominations; only products reviewed by InfoWorld’s Test Center during the previous year are eligible. The final selections are made by InfoWorld’s Test Center analysts and editors.

“JBuilder feels solid throughout - a remarkable achievement given its status as a first release on Eclipse,” wrote Andrew Binstock, senior contributing editor at InfoWorld. “JBuilder feels solid throughout - a remarkable achievement given its status as a first release on Eclipse.”

Binstock also praised CodeGear JBuilder 2007 for “a metrics package that is more extensive than any I’ve seen in any IDE” and “impressive collaborative features.”

Said CodeGear CEO Jim Douglas, “We’d like to thank InfoWorld as well as all the supporters in the Java developer community for the fantastic reception and endorsement you’ve given to JBuilder 2007. It’s a great honor to receive this award, and we’re thrilled by the success of the product in just one year. JBuilder 2007 offers unique graphical tools, performance tuning capabilities, and collaborative development features on top of Eclipse which are translating into real productivity and cost benefits for developers and development teams.”

Details on all winners of the InfoWorld 2007 Technology of the Year awards are available online at: http://www.infoworld.com/
JBuilder / JGear product line

JBuilder 2007 Enterprise

JGear: Performance

JGear: LiveSource™

JGear: Team Server & Client

JBuilder 2007

Turbo JBuilder

JBuilder 2007 Enterprise:

Brings the entire JBuilder and JGear lines together to offer a complete easy to install Java development package. It includes everything in the other packages plus more.

JBuilder 2007 Enterprise is the total solution.
Questions & Answers
Demonstrations

• An overview
  – Visualizing the “code”
  – Analysis
  – Tests
  – Performance
  – Documentation
Thank You ☺

• Additional JBuilder Resources:
  http://www.codegear.com/products/jbuilder

• JBuilder Product page:
  http://www.codegear.com/products/jbuilder

• JBuilder 2007 Videos:
  http://dn.codegear.com/article/33880

• Java developer information
  http://dn.codegear.com/java

• Java developer multimedia tutorials
  http://dn.codegear.com/tv/java
Thank You