Applications of Text Retrieval in Software Engineering

***STOP: 0x000000D1 (0x00000000, 0xF73120AE, 0xC0000008, 0xC0000000)

A problem has been detected and Windows has been shut down to prevent damage to your computer

DRIVER_IRQL_MOT_LESS_OR_EQUAL

If this is the first time you've seen this Stop error screen, restart your computer. If this screen appears again, follow these steps:

Check to make sure any new hardware or software is properly installed. If this is a new installation, ask your hardware or software manufacturer for any Windows updates you might need.

If problems continue, disable or remove any newly installed hardware or software. Disable BIOS memory options such as caching or shadowing. If you need to use Safe Mode to remove or disable components, restart your computer, press f8 to select Advanced Startup Options, and then select Safe Mode.

*** WXYZ.SYS - Address F73120AE base at C00000000, DateStamp 36b072a3

Kernel Debugger Using: COM2 (Port 0x2f8, Baud Rate 19200)
Beginning dump of physical memory
Physical memory dump complete. Contact your system administrator or technical support group.

***STOP: 0x000000D1 (0x00000000, 0xF73120AE, 0xC0000008, 0xC0000000)

A problem has been detected and Windows has been shut down to prevent damage to your computer

DRIVER IRQL NOT LESS OR EQUAL

Up to 90% of software cost is spent on maintenance

[Erlikh'00]

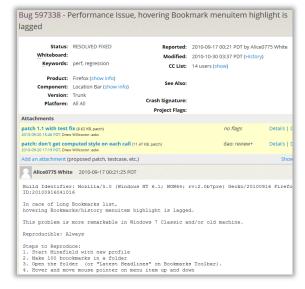
*** WXYZ.SYS - Address F73120AE base at C00000000, DateStamp 36b072a3

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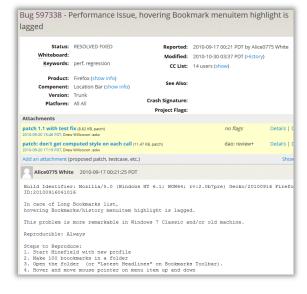
Incremental Change [Rajlich'04]

Change Request Concept Location Impact Analysis Implementation Testing Delivery

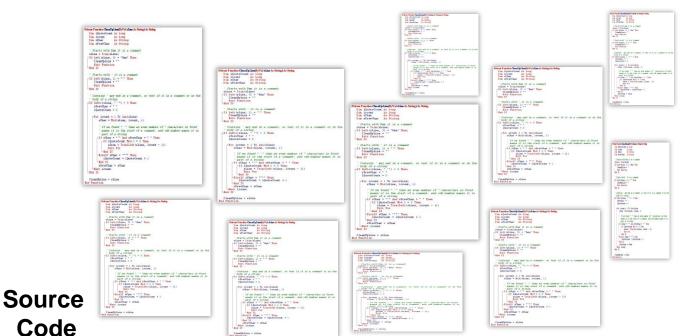


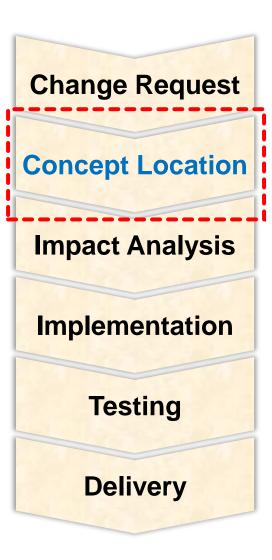
Bug Report Task

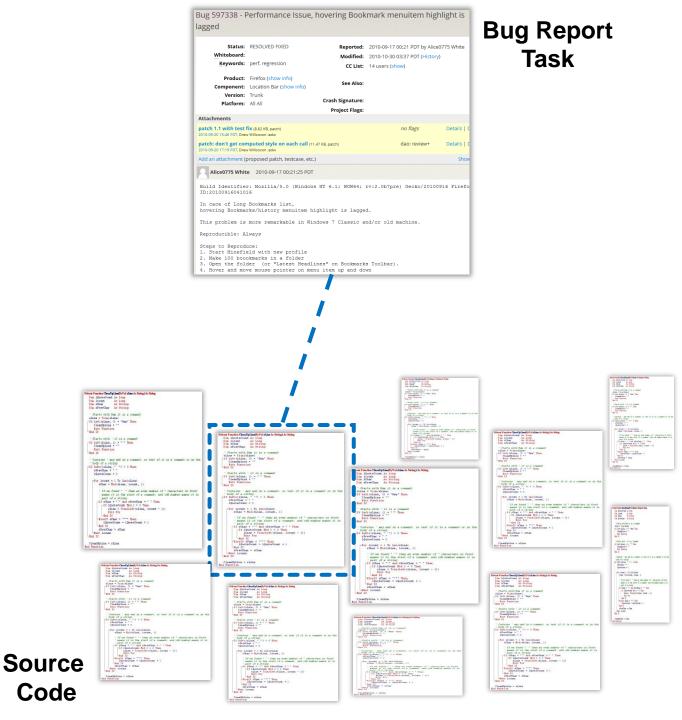




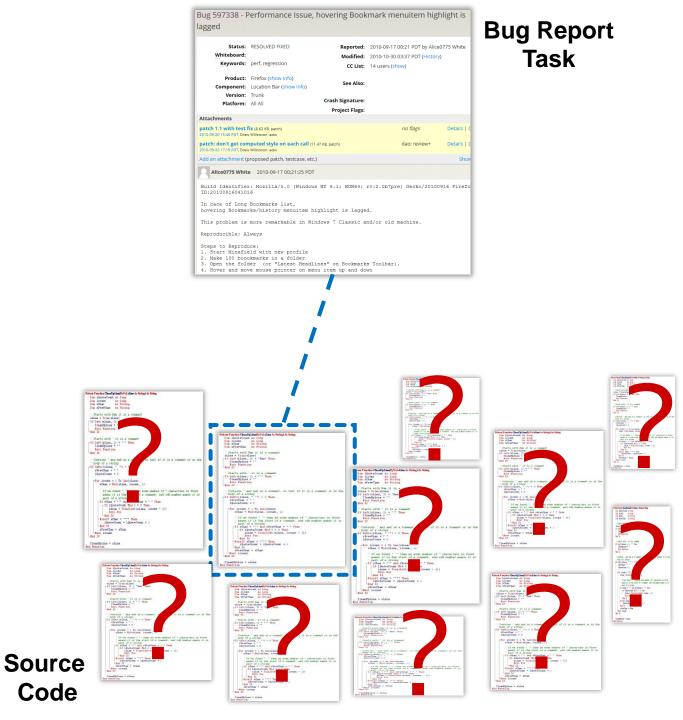
Bug Report Task

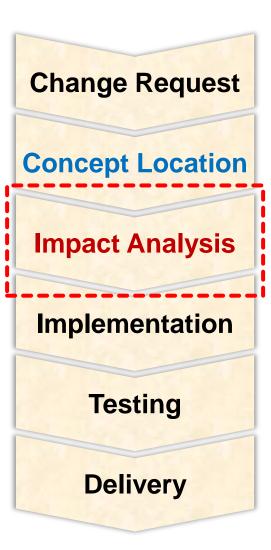


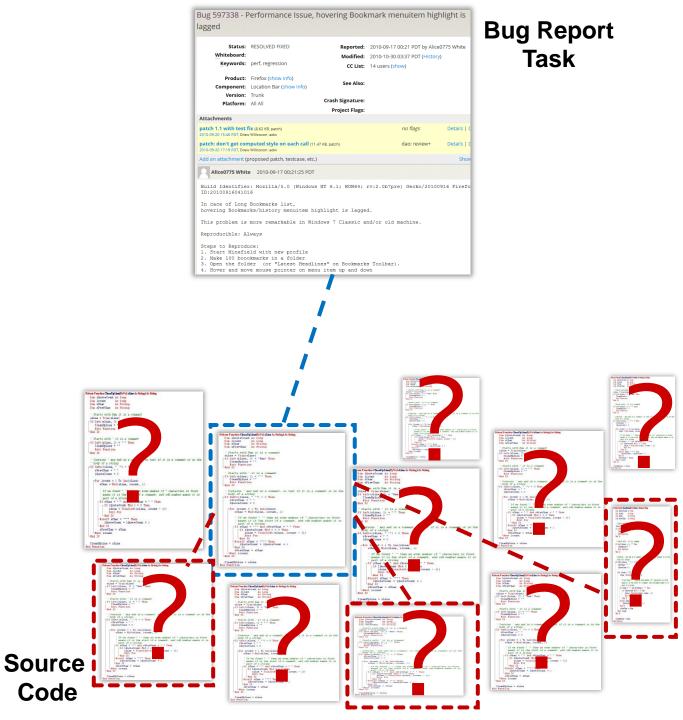














Bug Report

Change Request

Concept Location

Impact Analysis

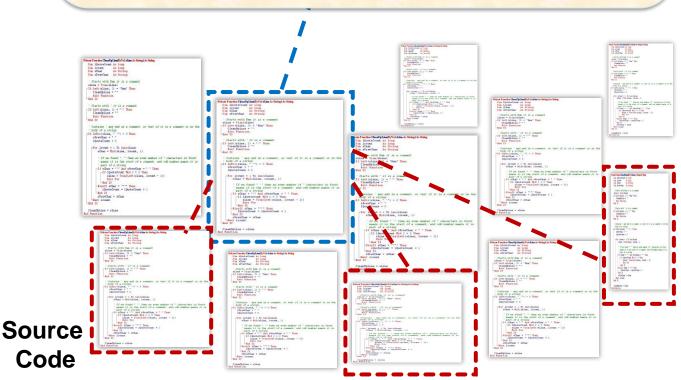
Implementation

Testing

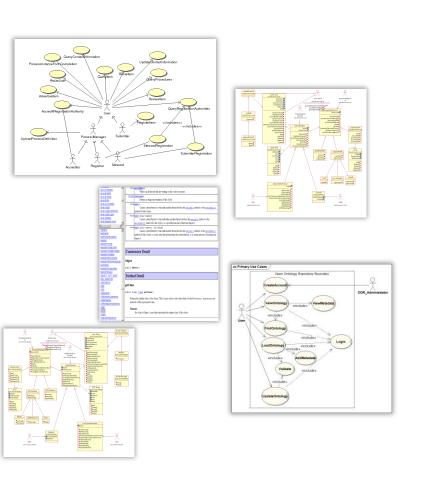
Delivery

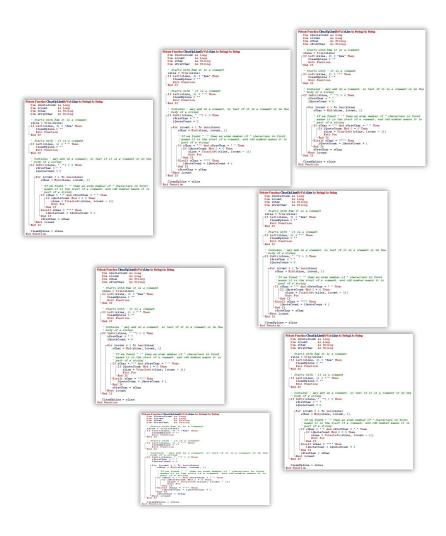
Extremely challenging tasks:

- Millions of Lines of Code
- Absence of original developer
- Missing or outdated documentation
- · etc.



Use Traceability Link Recovery?

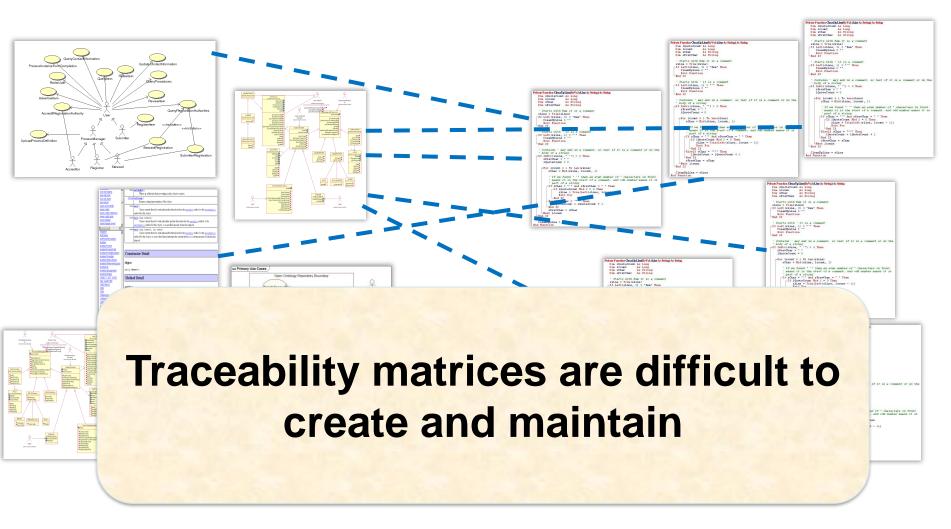




Design Documents

Source Code

Use Traceability Link Recovery?



Design Documents

Source Code

Software is not only source code...

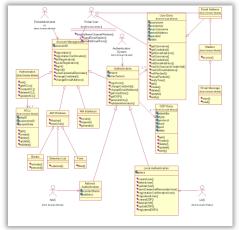
Source Code

Price Function Chamby Line(ByVal dime As String) As String Dim 10 years As long Dim 10 years As long Dim 10 years As long Dim 10 years Tile fact (clim, 2) = "Bem Then ClearDy Line = """ Then ClearDy Line = """ Then Tile 10 years years Tile 10 years

Documentation



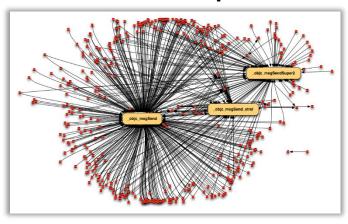
Design documents



Historical Information



Call Graphs



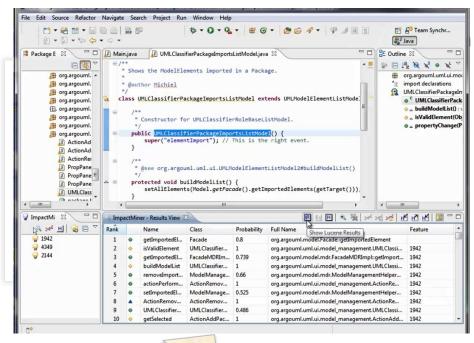
Issues



Execution Traces

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<methodEntry threadIdRef="5" time="1301063053.062891477" methodIdRef</pre> <methodExit threadIdRef="5" methodIdRef="75201" classIdRef="724" tic</pre>





Call Graphe

Information Retrieval

- Machine Learning
- Statistical Models
- · etc.

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signature="()V" startLineNumber="37" endLin
t=""" time="1301063053.062891477" methodIdRef

Execution Traces

Show dependency tree