# Software Tomography – Enabling Continuous Improvement in Software Development



#### Goal:

Continuous Monitoring of Deployed Software using

Lightweight, Configurable Instrumentation

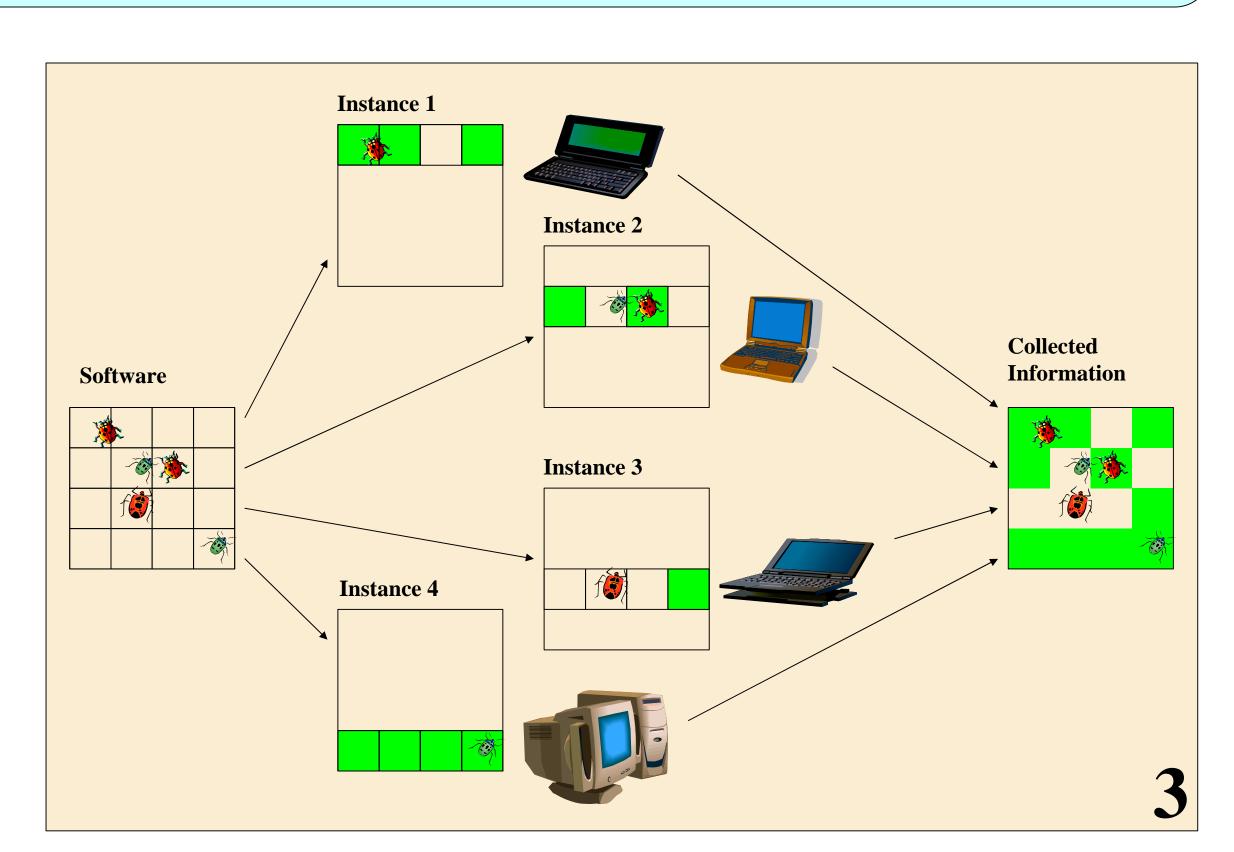
Solution: Software Tomography

Partition task and create probes

Distribute Probes

Collect, Integrate, Analyze Probe Data

Refine Probes



## Studied Monitoring Task:

Estimate branch coverage of deployed instances using Software Tomography

## **Questions:**

- > How good is the estimate?
- > Can estimate be improved with low overhead?

# Three Techniques:

SIMPLE: Single Branches

REF-RR: Replace Probes

**REF-AG: Add Probes** 

#### **Studies:**

- 1. All sites use SPACE uniformly
- 2. Each site uses SPACE uniquely

#### **Evaluations:**

Effectiveness w.r.t. base case Efficiency w.r.t.

- # of probes per instance
- # of updates of probes

Study 1

1200

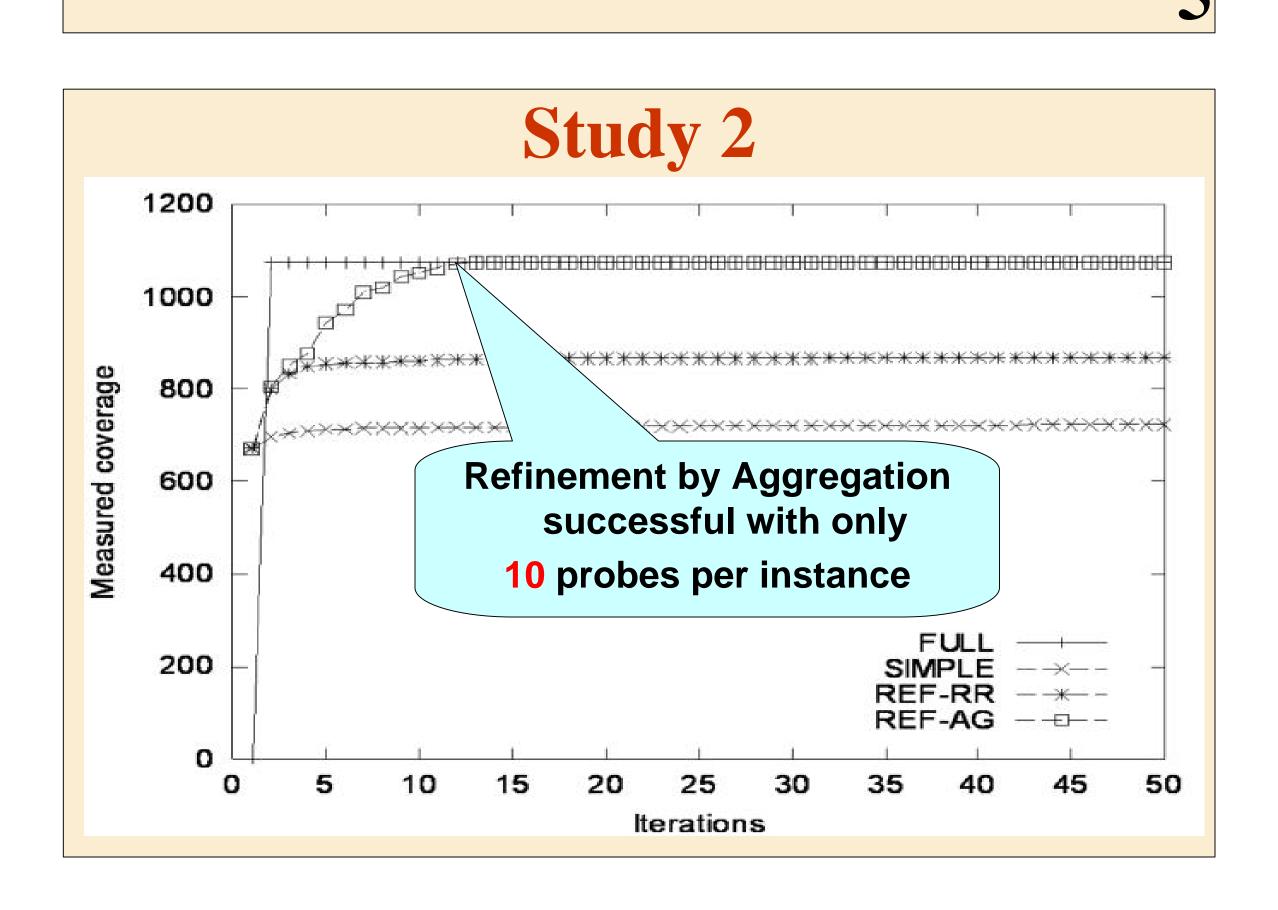
1000

800

Refinement by Aggregation successful with only
17 probes per instance

FULL SIMPLE REF-RR REF-AG

0 10 20 30 40 50 60 70 80 90 100 lterations



## **Conclusion:**

Software Tomography can provide a good estimate of the considered monitoring task.

#### **Future Work:**

Extend to other behaviors.

#### Advisors:

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