FastFix Project
www.fastfixproject.eu

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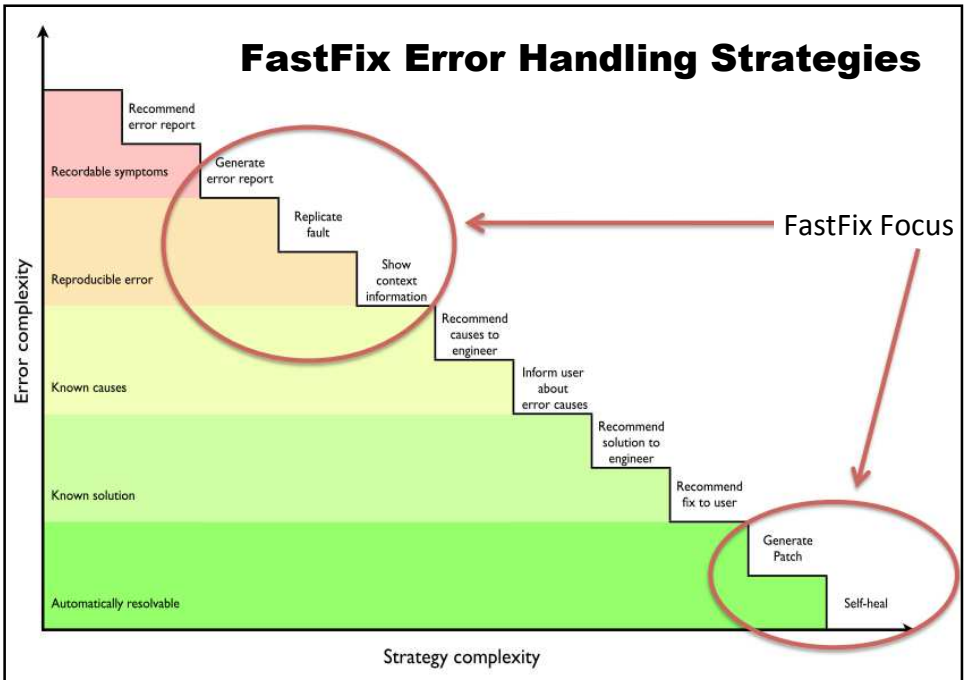
FastFix - Monitoring Control for Remote Software Maintenance

- A **platform/toolkit** that:
  - **Monitors** on-line customer environments;
  - **Collects** information on program execution and user interaction;
  - **Identifies** execution errors, performance degradation or changes in user behavior;
  - Deterministically **replays** error;
  - Automatically **patches** applications.

FastFix - Monitoring Control for Remote Software Maintenance

- 30 months (started July 2010), 4.8 M€

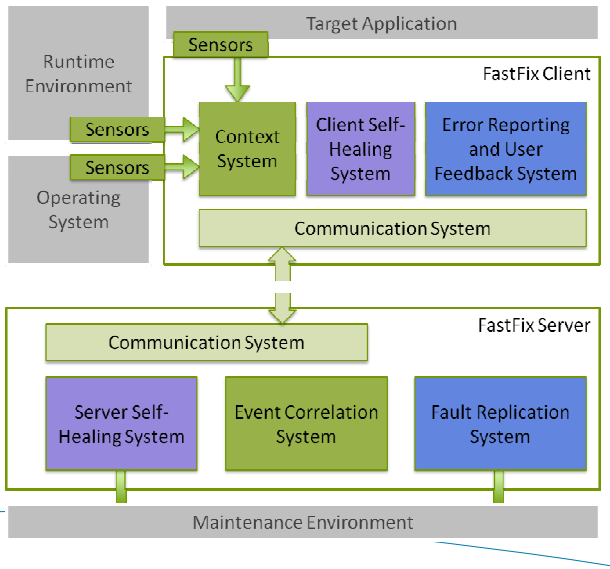
FastFix Error Handling Strategies



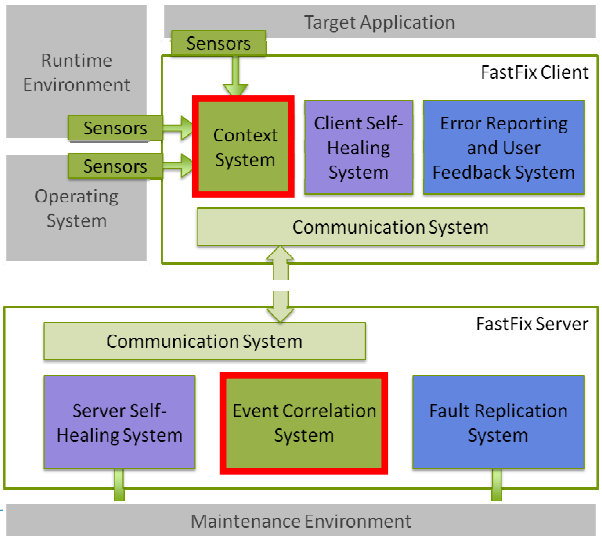
4 Typical Scenarios

1. Detect SQL injection in Webgoat web app:
   - Monitor input;
   - Detect SQL injection;
   - Inhibit feature;
   - Report error;
2. Moskitt (UML) tool OutOfMemory exception:
   - Execution monitoring;
   - Application replay;
   - Refer similar reports;
3. TXT Production Planning DB connection failure:
   - Detect app termination;
   - Insert ticket with error codes;
   - Compare sensor data and conf. File;
   - Patch instalation;
4. Mobile app usability problems:
   - Monitor user interaction;
   - Compare w/ recorded navigational paths;
   - Provide user help;

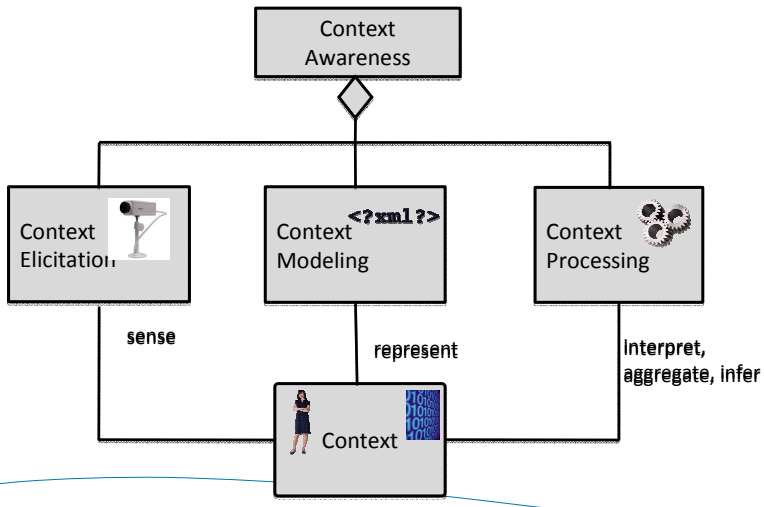
FastFix Architecture



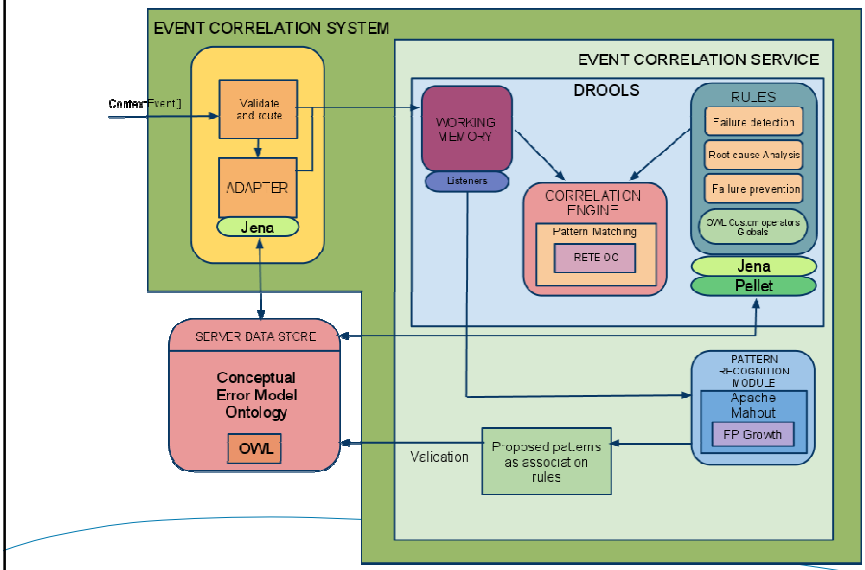
Context/Event Correlation



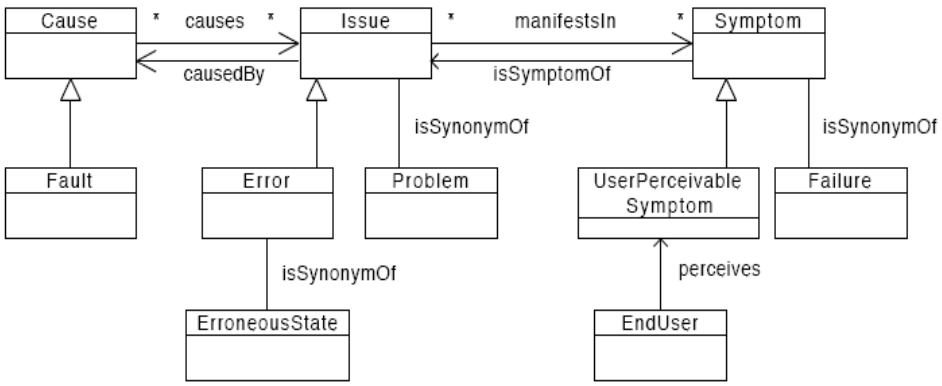
Context Awareness



Event Correlation Conceptual Model



Error Model Ontology



Domain Specific Language Elements

Some antecedent sentences

[when] from any of the current symptoms

[when] exists any known issue associated with the current symptoms

[when] over a time window of 5 minutes

[when] {Cause} is root of causality chain

Some consequent sentences

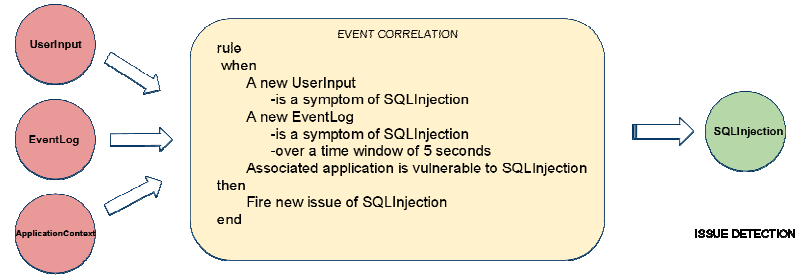
[then] insert {Issue} in the working memory

[then] report issue {Issue}

[then] report performance degradation{PerfDegradation}

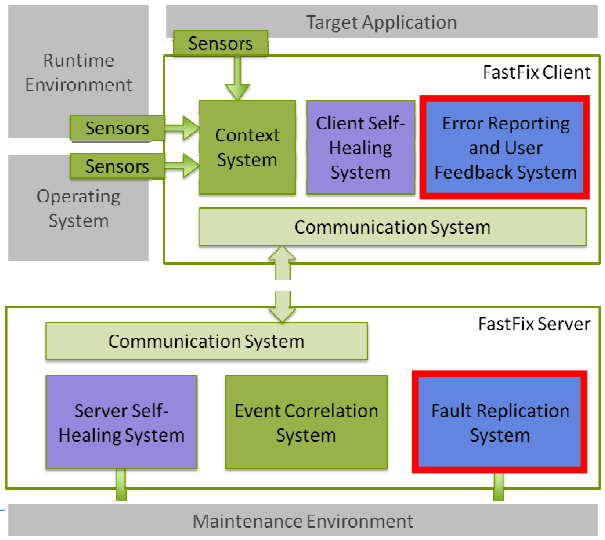
[then] request level of monitoring 3 on current sources

Example

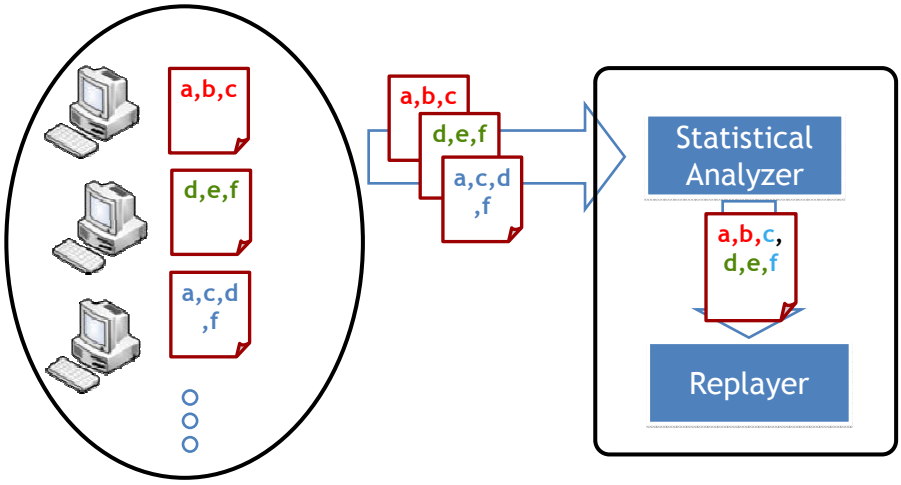


- Rule-based system:
  - Situation detection
  - Expressiveness
- Ontologies:
  - Represent error taxonomy
  - Represent cause-effect relationships

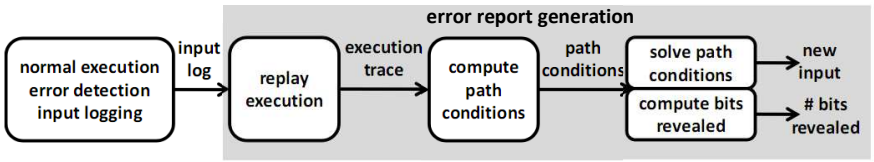
Fault Replication

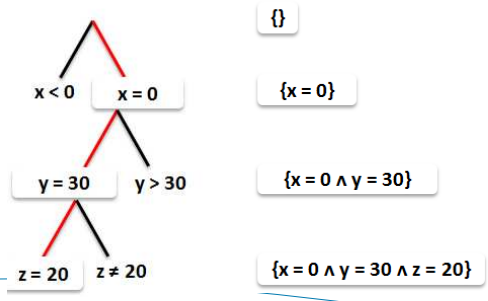


Cooperative Logging



Input Obfuscation

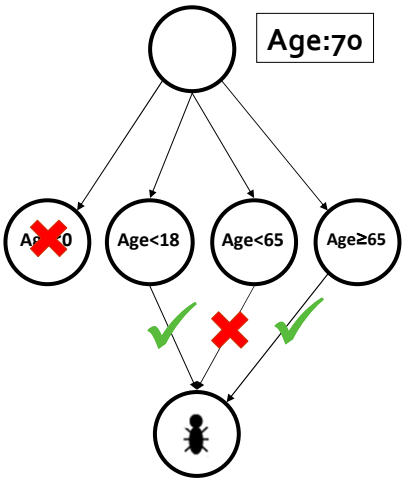




Input Obfuscation

```
age = getinput();

if (age < 0)
        exit();
else if (age < 18)
        user_age = CHILD;
else if (age < 65)
        user_age = ADULT;
else if (age >= 65)
        user_age = OLD;
```



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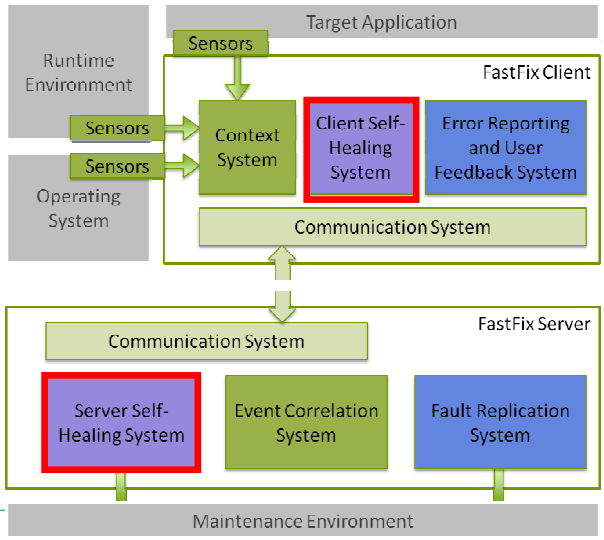
Automatic Feature Inhibition



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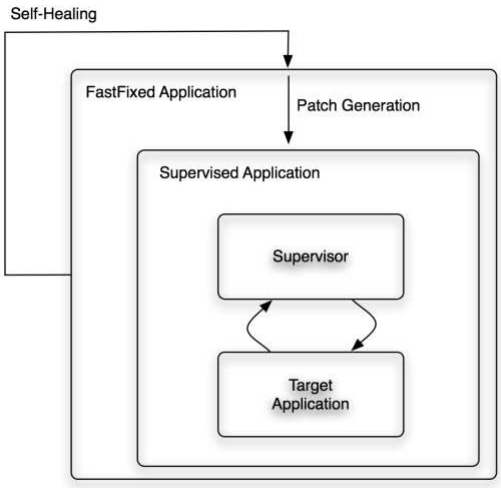

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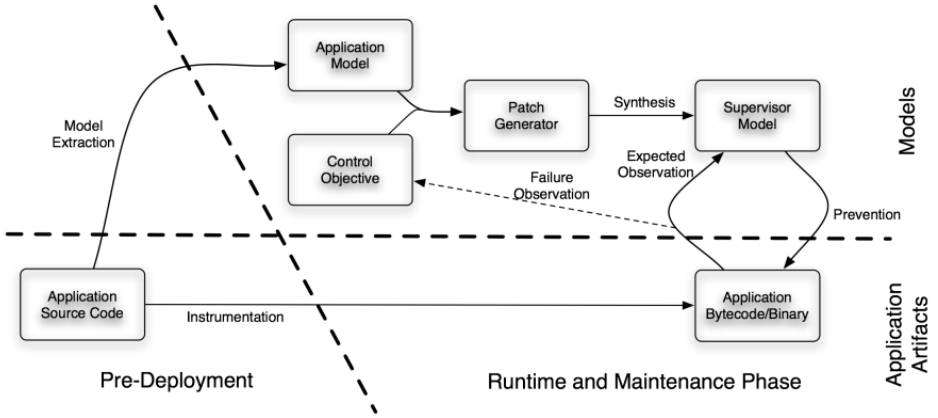

Conclusions

- FastFix platform: speed and precision of the client/server connection.
- FastFix toolkit:
  - Context awareness for improved correlation.
  - Privacy and performance in replay.
  - Automatic Feature Inhibition to limit damage.
  - Faster patching mechanism.


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Thank you!
Questions?
www.fastfixproject.eu